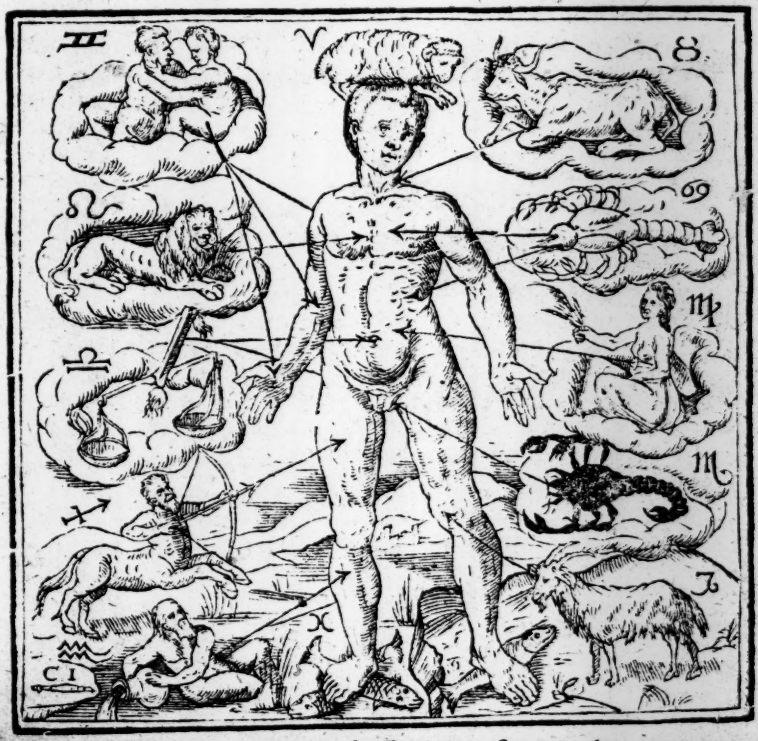
A

Prognostication euerlasting of right good *effect, fruitfully augmented by the Author, containing* plaine, briefe, pleasant, chosen rules to iudge the weather by the Sunne, *Moone, Starres, Comets, Rainbow, Thunder, Clowdes, with other extra-*ordinary tokens, not omitting the Aspects of Planets, with a briefe iudgement for euer, of Plentie, Lacke, Sicknes, Dearth, Warres, &c. opening also many naturall causes worthie to be knowne.

To these and other now at the last, are ioyned diuers generall pleasant Tables, with many compendious Rules, easie to be had in memorie, manifold wayes profitable to all men of vnderstanding. Published by Leonard Digges Gentleman Lately corrected and augmented by Thomas Digges his sonne.



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BRITISH MUSEUM

To the Honorable Sir Edward Fines, Earle of Lincolne, Baron of Clinton and Say, Knight of the noble order of the Garter, Lord high Admirall of England, Ireland, and Wales, and the Dominions and Iles thereof, of the towne of Calice, and marches of the ſame, Normandie, Gaſcoigne and Guian, and Captaine generall of the Queenes Maieſties Seas and Nauie royall.

RIght Honorable, hauing of long time ſundrie waies found your Lordſhips great fauour, not only toward my father in his life time, but alſo toward his, moſt bountifully continued ſithence his death: I haue carefully thought which way I might ſome way yeelde a teſtimonie of a greatefull mind. And peruſing of late a Booke of my fathers to your Lordſhip dedicated, by negligence, or ignorance of Correctors many wayes depraued, I determinde both to amend the faults, and with ſome additions to amplifie the ſame, briefely alſo to touch and diſcouer certaine errors touching matters of Nauigation, transferred into our language. And although I haue in a peculiar volume for that purpoſe prepared to entreat at large, deliuering new Rules and Methods, hitherto in no language publiſhed, nor to my knowledge of any forraine Nation practiſed, not onely in demonſtration void of all error, but alſo in practiſe feazible: Yet in the meane, leaſt further boldnes by ignorance ſhould encreaſe, to deriue vs mo errors from other nations, whereof our Seamen haue learned too many already: I thought good at the end of this booke to note ſome of the moſt vſed and eſteemed, and among that faction held for Oracles, whereby indeede they haue been and are (in all nauigations) ſo miſled, that were they not by ſight of the coaſt, and ſoundings better directed, then by any troth in their Art, many moveſſels ſhould daily periſh. This preſent token therefore of dutifull goodwill, I ſhall humbly deſire your Lordſhip in good part to accept, meaning hereafter (God ſparing life) to honor your Lordſhip, and profit my countrey with matters more rare. And in the meane while I humblie take my leaue.

BRITISH MUSEUM

At your Lordſhip commandement
Thomas Digges.

To the Reader.

TO auoyd) gentle Reader) the yearely care, trauailes, and paines of other, with the confuſions, repugnances, and manifold errors, partly by negligence, and oft through ignorance committed: I haue againe briefly ſet foorth a Prognoſtication generall, for euer to take effect: adioyning thereto diuers profitable collections, and many pleaſant concluſions, eaſie of all willing ingenious to be perceiued. Here note (Reader) whereas the eleuate Pole and Meridian ſhould be conſidered, in this worke it is performed for London, becauſe I wiſh this Meridian, ſituation or clime the exact truth of things. If any yearely practiſes in like matters agree not with my calculations, bee aſſured they are falſe, or at the leaſt for other Eleuations or Meridians ſupputated, and therefore little ſeruing thy purpoſe. And that the late rude inuentions, and groſſe deuiſes of ſome this yeare, and two yeares paſt publiſhed might be of them perceiued, then filed, and to ſerue to ſome profit: I haue purpoſed euen now to put forth a booke named *Panarges*, wel ſeruing their turne, and ſo generally & moſt exactly al Europe, pleaſant and profitable to the learned, and no ſmall delight to all manner of men. Another booke is alſo already come to thy hands, entituled *Tectonicon*, a treaſure vnto the Maſons, Carpenters, Landmeaters, correcting their olde errors, wrongfully reckoned of them as infallible grounds, teaching faithfully, ſufficiently, and very briefly, the true menſuration of all manner land, timber, ſtone, boord, glaſſe, &c. And at the end contayning an Inſtrument Geometricall appointed to their vſe. Take in good worth theſe labours (louing Reader) and looke ſhortly for the pleſant fruites Mathematicall, euen ſuch as haue been promiſed by my friends, and partly by me. Neither ſhall my deſire to profite, here ſtay: but intendeth further to procede, if theſe ſeeme accepted. As the good will of Printers not had, kept the foreſayd from you: ſo I truſt the willing minde and excellencie of *Thomas Gemini* ſhall bring them ſhortly vnto you. Certes my hope is, while life remaineth, not to bee vnfruitfull to this common wealth, with ſtudie and practiſe.

Againſt

Against the reprouers of Astronomie, *and Sciences Mathematicall.*

I Am diuerſly occaſioned (louing Reader) ſomewhat to write in the commendation of the Mathematicals: which neede not, but onely to open the fooliſh raſhnes, and raſh fooliſhnes of ſuch, which of late haue in writing diſpraiſed theſe goodly arts. It is an old ſayd ſawe, and true: *Scientia non habet inimicum niſi ignorantem.* But to auoyd tediouſneſſe, and chiefly for the more ſatiſfying, I referre all of that ſort, which haue taſted any learning (the reſt not regarded) to the firſt part of famous Guido Bonatus de vtilitate Aſtronamiæ in communi: where he writeth *contra illos, qui dicunt quòd ſcientia Stellarum non poteſt ſciri ab aliquo: contra illos, qui dixerunt, quòd ſcientia Stellarum non eſt vtilis, ſed potiùs damnoſa &c. contra illos, qui contra dicunt iudicijs Aſtronomiæ, & qui reprehendunt eam, neſcientes dignitatem eius, eò quòd non eſt lucratiua.* Alſo for breuitie I appoynt all nice Diuines, or (as Melanchthon termeth them) *Epicurei Theologi*, to his hie commendations touching Aſtronomie, vttered in his epiſtles to Simon Grineus, to Schonerus, & to the perorations of Cardanus 5. bookes, where he ſheweth how farre wide they alleage the Scriptures againſt the Aſtronomer, which make wholy with the Aſtronomer. Melanchthon writeth and affirmeth: *Arrogantiam eſſe cum ſumma ſtultitia coniunctam, venari choragium aliquod gloriæ ex infectatione artium, quæ ſunt graui autoritate doctorum prudentium receptæ:* he calleth it *manifeſtum inſaniæ genus*, declaring *quòd magis opus habent Medicis, quàm Geometris*, aduiſing the learned not to giue eare vnto their follie. *Sinamus (ait) vnà cum Epicuro ineptire.* Which counſell I

Vituperant qui ſimpliciter eas ignorant.

I follow. Now therefore, yee enemies of all good doctrine, either giue an ouerthrow and that with your pen, or let famous Guido, or learned Melanchon satisfie. If neither: certes I will shortly (God sparing life) take some paine in publishing the wonderfull vnknowne pleasant profits of these dispraised high knowledges, and by that meanes to inforce silence.

Now in fewe, for thy incouragement in these, thus I say and truly, the ingenious learned, and wel experienced circumspect student Mathematicall, receiueth daily in his wittie practises more pleasant ioye of minde, then all thy goods (how rich soeuer thou bee) can at any time purchase. *Id tantum quod pulchrum est, quod purum est, quod diuinum est, nihil mortale sapiens dulci ardore amplectitur. Vt multa paucis: crede mihi, extingui dulce erit Mathematicarum artium labore.* Now to ende: that learned Guido, that excellent Guido Bonatus, sheweth what Astrologie or Astronomie is, and ought not (sayth he) by any meane to bee reprehended, in that the most wise, yea, the holy fathers haue practised that science. Yee proueth it one of the chiefe sciences Mathematicall, by the authoritie of the best learned, and by Aristotle in his Posteriorum. How commeth it to passe (louing Reader) seeing it is a noble Science, *Et Scientia est notitia vera conclusionũ, quibus propter demonstrationẽ firmiter assentimur*, that it is counted vaine and of so smal strength: the secret truths and most pleasant profits therein not desired, yea vtterly despised, & of some busie biting bodies reiected as very lies: Let no man doubt ignorance, the great enemie of all pure learning hath wrought this. *Nam incertam vocat hanc artem vulgus, propter errores, non arti, sed hominum indoctissimorum insciti, & temeritati imputandos, qui citra delectum omnia effutiunt.* Thus I leaue tedigestly farther to trouble: fauour me as I tender the furtherance of good learnings, profitable to a common wealth. Fare most hartely well, vnfained good Christian Reader.

Stulti negligunt & contemnunt: qui contradicit ambitiosus est: qui maledicit, fatuus.

The

The Contents of this *Booke.*

FRom the next side to the fift leafe are contayned the forme of a Quadrant, Square, Circle, Quantities, with a figure truly placing the sayd Quantities in the heauen.

From the fift to the thirteenth, ye haue the iudgement of weathers by the Sunne, Moone, Starres, Comets, Rainbow, Thunder, Clowdes, with extraordinary tokens and aspects of Planets, &c.

The 13. 14. 15. and 16. leafe, shewe the causes of such alteration according to Aristotle. First of the Rainbow, then Raine, Frost, Dew, Snow, Hayle, Windes, Earthquakes, Thunders, Lightnings, Comets, Sunne and Moone eclipsed, Quantities of the Planets, and their placing ocularly demonstrated.

The 17. the aspects of the Moone and her signification in the 12. celestiall Signes.

The 18. 19. 20. what Signe the Moone is in and shall bee for euer, the meete time to let blood, to purge, to bathe, to fell timber to sow, to plant, to graffe, cut, geld, &c.

The 20. and 21. haue Tables for the Sunday letter, for the Golden number or Prime, for the Epact and moueable feasts, many wayes conducing.

The 22. 23. and 24. the age of the Moone, the change and quarters for euer are declared, the Ebbings and Flowings, the breake of the day, the Sunne rising, the length of the day and night, the Twylight for all the yeare.

The 25. 26. and 27. shew exact pleasant wayes for the day and night houre, with composition of meete instruments.

From the 29. to the 34. leafe, yee haue the peculiar Kalendar, very commodious for the day and night houre.

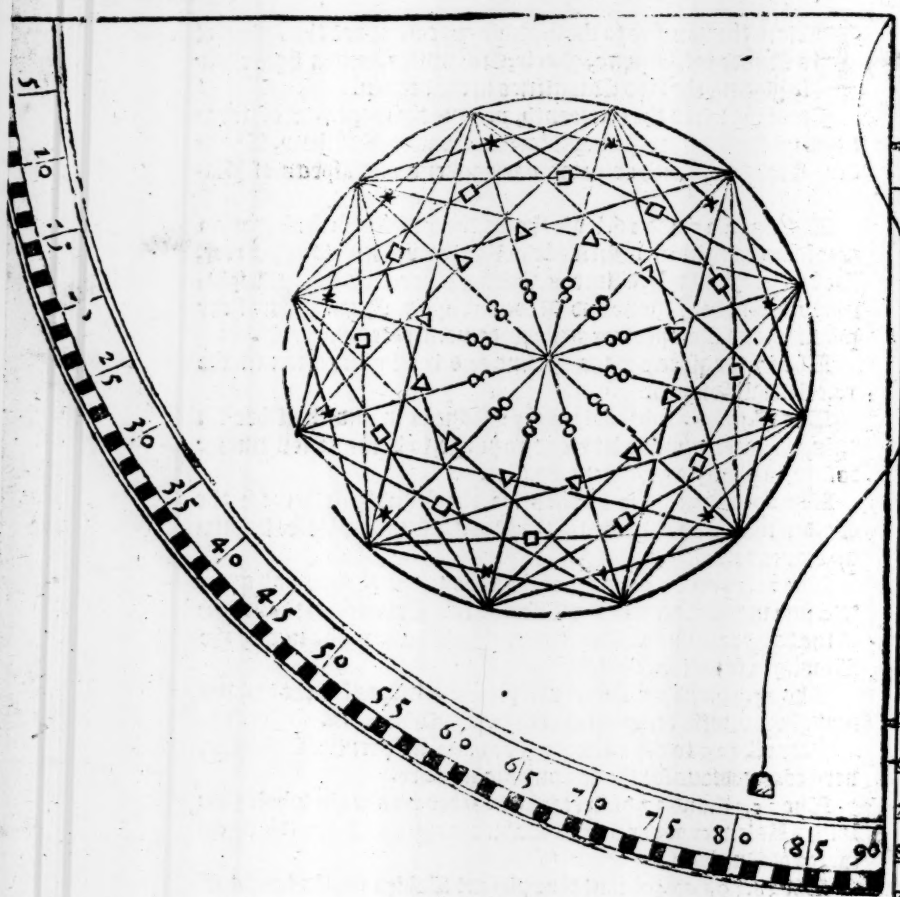
The 35. 36. and 37. declare infortunate dayes of the whole yere with a Kalender generall, and Tables as generall for the chiefe fayres of England.

The 38. 39. and 40. contayne pleasant Tables for the height of the Sunne at all houres, for right and squire shadow conducing also to the composition of many instruments, &c.

The 40. and 41. leafe, Colections easie to bee had in memorie.

This

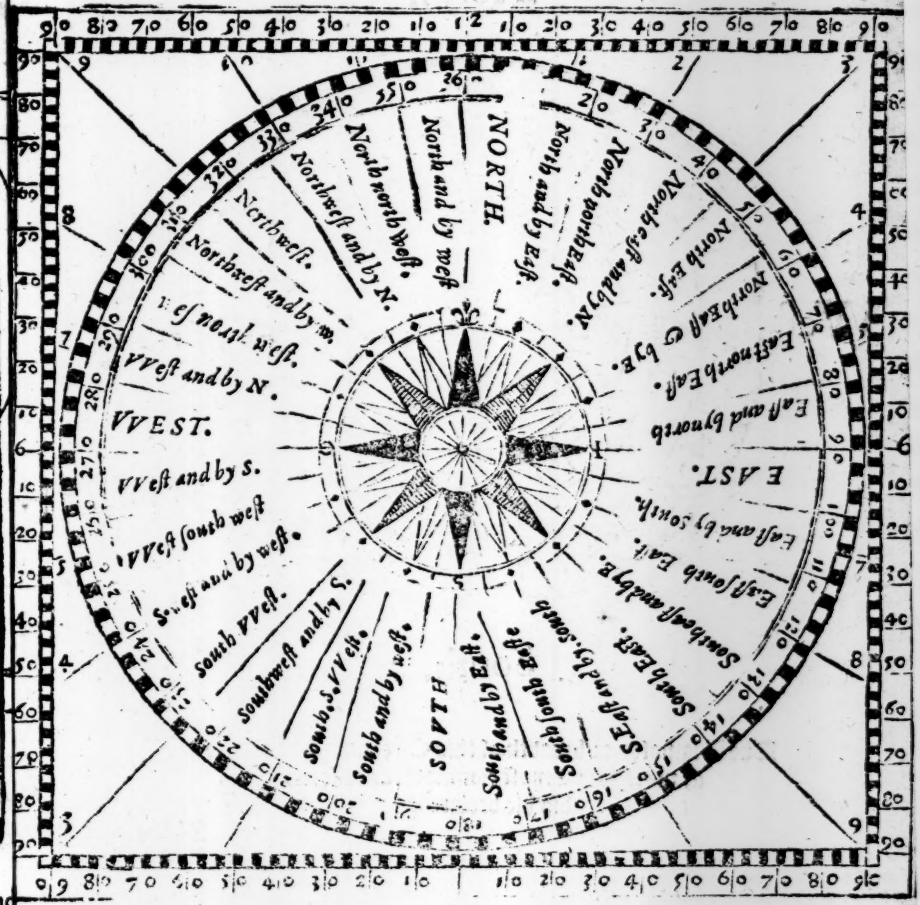
This Quadrant is appoynted here to get exactly the length of Staffe and Squire shadow, how vnleuell soeuer the ground be, as I haue sufficiently instructed in the eight and thirtith leafe.



If ye list not to make a Quadrant, ye may vse this very well: adding a plummet and line, with sights or otherwise.

This

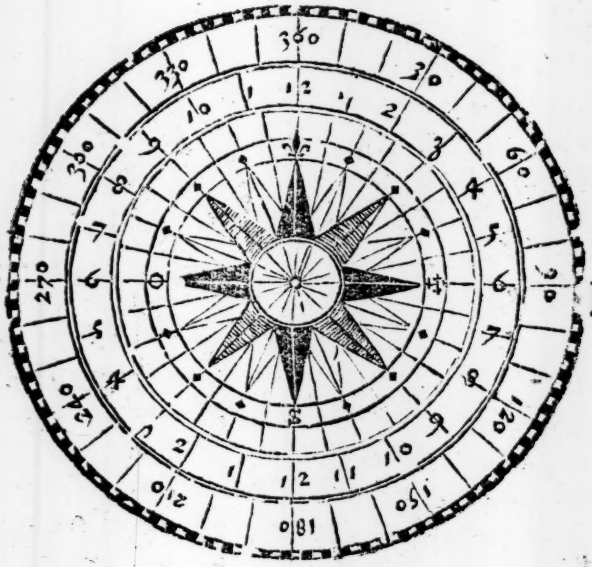
This instrument must bee made in a plaine fine mettall plate, a foote, or more square. Then it is pleasant for the houre of the day and night, either to be fixed about your house, or moueable if ye list, by a needle to be placed where, and when ye will. *The 26. leafe sheweth the making.*


NORTH.
North and by East.
North east by East.
North east.
North east and by N.
North East & by E.
East North East.
East and by North.
EAST.
East and by South.
East South East.
South east and by E.
South East.
South East by East.
SOVTH
South and by West.
South South West.
South West.
South West and by S.
South West by West.
South West and by W.
West North West.
West and by North.
VVEST.
West and by S.
West South West.
South West and by West.
South West.
South West and by S.
South South West.
South and by West.
SOVTH
South and by East.
South South East.
South East.
South East and by East.
South East by East.
South East and by E.
East South East.
East and by South.
EAST.
East and by North.
East North East.
East North East & by E.
North East.
North East and by N.
North East by East.
North East.
North North East.
North and by East.
NORTH.
North and by West.
North North West.
North West and by N.
North West.
North West and by W.
West North West.
West and by North.
VVEST.
West and by South.
West South West.
South West and by West.
South West.
South West and by South.
South South West.
South and by West.
SOVTH
South and by East.
South South East.
South East.
South East and by East.
South East by East.
South East and by East.
East South East.
East and by South.
EAST.
East and by North.
East North East.
East North East & by East.
North East.
North East and by North.
North East by East.
North East.
North North East.
North and by East.
NORTH.
North and by West.
North North West.
North West and by North.
North West.
North West and by West

Or thus, without the Square this Circle will ſerue well your purpoſe, being exactly made and truly placed.

North.

West



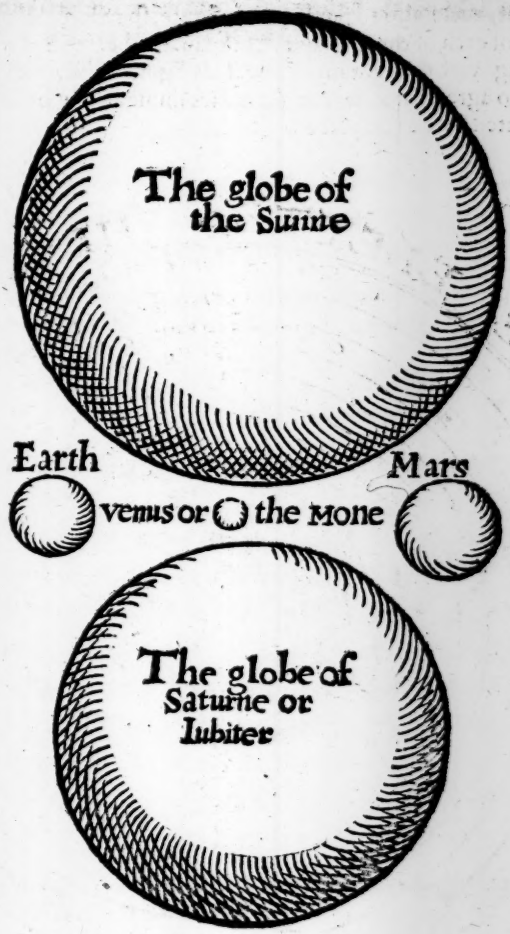
East.

South.

The Diameter, or breadth of this Circle, muſt be a foote or more, ſo is it moſt commodious to ſerue his vſe declared.

I haue

I haue placed ready to bee conceiued euẽ here at ẏ eye, the true quantities or magnitudes of the seuen Planets, the one to the other, & euerie one to the Earth: which may satisfie thẽ that scorned my last publishing, where I declared the Globe of the Sun, to containe ẏ Globe of the Moone 7000. times. I would they were able to conceiue demonstration made: then ẏ truth more euidently appearing, would pull scorning away.



I thought it meete alſo to put here this figure, ſhewing the placing, compaſſing, and diſtance of each of the foreſayd Planets in the heauen: which diſtances, at my laſt publiſhing were thought impoſible. This figure wittily weighed, may confirme a poſſibility to agree vnto the true quantities immediately before put foorth, therefore not omitted here to be placed.

How

the Sunne rising or going downe.

THe Sunne in the Horizon or rising, clére and bright, shewth a pleasant day: but thinly ouercast with a clowd, betokeneth foule weather. Also at the going downe, the body diuerslye coloured or red, and about dispersed with like clowdes, the beames red, and of length, pronounce great windes, the next day from that part. Blacknesse in the Sunne or Moone, betokeneth water: Red, signifieth winde. De obseruandis meteoris.

The Element red in the euening, the next day fayre: but in the morning red, winde and raine. Also the Sunne beames spotted greene, pale, or blacke, gathered to a clowd, signifieth raine. Further, the Sunne at the setting plainely seene without any clowde, declareth a faire night to ensue.

Here note, Ptolome willeth vs diligently to obserue the circle, or circles about the sunne. If it be cleare, and the circle of no continuance, behold fayre weather: If many of them, winde.

Windes more vehement are signified, if that the circles bee somewhat red, here and there broken: but these obscured, thicke, and blacke, looke for cold, wind, and snow.

What is spoken of the sunne, touching the circles, the same is ment of the Moone.

Note here that greater windes chaunce in the day, than in the night. Note.

How weather is declared by the colour of the Moone, and by the nature of the signe wherein she is.

IF the Moone in the third of her chaunge, yea, three dayes before the full, or in the middest of the quarter be found of pure light, nothing compassing her, the end direct vp, she promiseth faire weather: but bent to red colour, pronoketh winde. The Moone pale or somewhat inclined to black, obscure or thicke, threatneth raine. Luna rubens ventat, pallor pluit. Alba serenat.

Also by the nature of the signe, weather may bee iudged, thus according to Stoeflerinus, Monte regius, Leupoldus, and famous

Guido Bonatus, with others well trauailed in the mutations of ayre.

♈ ♌ ♐ Hote.
♉ ♍ ♑ Eearthie.
♊ ♎ ♒ Airie.
♋ ♏ ♓ Watrie.

COnſider the nature of the ſigne where the Moone is at the chaunge, quarter, and full. If ſhe be in hote and drie ſignes, as Aries, Leo, Sagittarius, in winter a good token of faire weather: In Summer a great ſignification of immoderate heate. If in earthy, cold and drie ſignes, as Taurus, Virgo, and Capricornus, in winter iudge cold, froſt, and ſnow to enſue: but in Summer temperate weather. In ayrie and windie ſignes, as Gemini, Libra, and Aquarius, much wind. If in watrie, cold and moyſt ſignes, as Cancer, Scorpio and Piſces, in winter wet weather: In ſummer a pleaſant temperature.

ALſo, the Sun in Aquarie: the Moone at the chaunge there, or in Sagittarie, or at the full in Leo, betokneth raine. The Sunne in Piſces or Aries: the Moone in Virgo, Libra, or Sagittarie, ſignifieth raine, eſpecially in watrie dwellings. The Moone in Aquarius or Piſces, looke for chaunge of weather, then chiefly ſhe troubleth the ayre. The Moone alſo at the change, or rather at the full, in Aries, Libra, Scorpio or Piſces, tempeſtuous weather followeth. The Sunne in Aquarie, in Aries, Libra, or Scorpio, but chiefly in Leone: the moone then at the full, and that after raine or miſlings, look for lightning thunder, &c. To conclude, the Moone in Cancer, Leo, Capricornus, or Aquarius, ayded with any aſpect, but chiefly with oppoſition or Quadrat of Venus, raine followeth.

The Iudgement of weather by ſtarres.

Cum maiora apparent tum enim Humore medius craſſeſcit aër.

BEhold the ſtars whoſe magnitude you know beſt. If they appeare of much light, in bigneſſe great, more blaſing then they are commonly, it betokeneth great wind or moyſture in that part where they ſhew: in winter, cold and froſt. When Stars ſeeme to runne in the Element, it ſheweth winde. Affirme alſo alteration of weather, if they bee fewe in number, cloudie, and of little light. Further, when dimme Starres appeare with long fierie tailes,

tailes, iudge windes and great drought, the more in number, the greater effect. When Starres in the night (as it is sayd) shoote or seeme to fall, it argueth winde in that part. If in diuers places, inordinate windes, if in all places, then pronounce winde, thunder, lightnings, yea weather most tempestuous.

The significations of Comets.

COmets signifie corruption of the ayre. They are signes of Earthquakes, of wars, changing of kingdomes, great dearth of Corne, yea a common death of man and beast. De Cometarum prodigijs, lege Cardanum lib. 5. Fol. 83. & Antonium Mizaldum de Cometographia.

Pontanus sic scribens: Ventorum quoque certa dabunt tibi signa Cometæ: Illi etiam belli motus, fráque arma minantur, Magnorum & clades populorum, & funera regum, aquarum significant penuriam.

How by the Clowdes, chaunge of weather is perceiued.

IF thicke clowdes resembling flockes, or rather great heapes of wooll, be gathered in many places, they shew raine. Also when grosse, thicke, darke clowdes, right ouer the North part, or somewhat declining to the West are close with the Earth, immediatly followeth raine. If they appeare like hilles, some deale from the earth, a good token of weather ouerpassed. Black clowdes signifie raine. White clowdes appearing in winter, at the Horizon, two or three dayes together, prognosticate colo and snow.

Of the Rainbow and his effect touching alteration of ayre.

IF in the morning ỹ Rainbow appeare, it signifieth moysture, vnlesse great drought of ayre worke the contrarie. If in the euening it shew it selfe, faire weather ensueth, so that abundant moyst ayre take not away the effect. Arcus nisi sole aduerso non fiunt.

Or thus.

THe Rainbow appearing, if it bee faire, it betokeneth foule weather: if foule, looke for faire weather. The greener, the more raine: redder, winde. Non apparet nisi cùm vapores rarificantur vel inspissantur.

Of

A generall Prognostication

Of thunders what they signifie.

Thunders in the morning, signifie wind: about noone, raine: In the euening great tempest. Some write (their ground I see not) that Sundayes thunder, should bring the death of learned men, Iudges and others.

Signum futurorum bellorum.

Mondayes thunder, the death of women.

Tuesdayes thunder, plentie of graine.

Wednesdays thunder, the death of harlots, & other bloodshed.

Thursdayes thunder, plentie of sheepe and corne.

Fridayes thunder, the slaughter of a great man, and other horrible murthers.

Saturdayes thunder, a generall pestilent plague & great death.

How weather is knowne after the change of euery Moone by the prime day.

Common tokens of weather meete for all manner of wits.

Sunday Prime, drie weather, Monday Prime, moyst weather. Tuesday Prime, cold and windie. Wednesday Prime, wonderfull. Thursday Prime, faire and cleere. Friday Prime, mixt weather. Saterday Prime, moyst weather.

Now ensue extraordinarie tokens for the knowledge of weather.

Some haue obserued euill weather to followe, when as watrie fowles leaue the sea, desiring land: the fowles of the lande flying high: the crying of fowles about waters making a great noise with their wings: also the seas swelling with vnaccustomed waues: If beasts eate greedily: If they licke their houes: If they sodainly moue here and there making a noyse, breathing vp to the ayre with open nostrels: raine followeth. And the busie heauing of Moules: the appearing or comming out of wormes: Hennes resorting to the perch or roust couered with dust, declare raine. The ample working of the Spinner in the ayre: the Ant busied with her egges: the Bees in faire weather not farre wandring: The continuall prating of the Crow, chiefly twise or thrise quicke calling, shew tempest. When the Crow or Rauen gapeth against the Sunne in summer, heate followeth. If they busie themselues

in

in proyning or washing, and that in winter, looke for raine. The vnaccustomed noise of poultry, the noise of swine, of peacocks, declare the same. The swallow flying and beating the water, the chirping of the Sparrow in the morning signifie raine. Raine suddenly dried vp. Moody couerings straighter then of custome. Bels heard further then commonly, the wallowing of dogges, the alteration of the Cocke crowing, all declare rainie weather. I leaue these, wanting the good ground of the rest. If the learned be desirefull of the aforesaid, let them reade graue Virgil, Primo Georgicorum. At Bor. &c.

There be a multitude of other not extraordinary, but of the best known causes: many for brevity here omitted, the most part not mentioned, because they passe the capacitie of the common sort, vpon all the which the Astronomer doth well and learnedly conclude. I doubt not, there be also sometime vnknown matters, mitigating the aforesayd, or prouoking tempest vnlooked for, which neither experience, ne learning hath established. How vnkind (these considered) yea how farre from worthie thankes giuing are they, which in generall headdely doe blame, checking bitterly the Astrologer, with these Iudiciarie matters (the least part among a number of his most certaine doings) when things fortune contrary to expectation? Vnderstand gentle Reader, the consent of a multitude famously learned in their buckler, euen in these matters Iudiciarie: who haue waged a long time prudentlie, the great strength, the vehement force and maruellous natures of all erraticall, and celestiall constellations, with their Angles, Radiations, Aspects, Affections, Stations, Progressions, Defections, Dispositions, Applications, Preuentions, Refrenations, Contrarieties, Abscissions, Coniunctions, Quadratures, and Oppositions, &c. Therfore extreame folly, yea more then madnes doth he vtter, which imbraydeth or backbiteth these knowledges, not remembring the great and manifold benefits had through them, and that with most certaintie in all other doings.

What Meteorascoper, yea who learned in matters Astronomicall, noteth not the great effects, at the rising of the starre called the little Dogge? Truly the consent of the best learned doe agree of his force: yea Plinie, in his historie of nature affirmeth the

Seas then most fierce, wines to flow in cellers, standing waters to moue, dogs enclined to madnesse, then most wood. Further, these constellations, Orion, Arcturus, Corona, rising, prouoke tempestuous weather. The Kid & Goat, windes. Hyades, or Succulie, raine. What Meteorologer consenteth not to the great alteration and mutation of ayre, at the Coniunction, Opposition or Quadrat aspect of Saturne, with either two lights? Who is ignorant yea meanly trualled in Astronomie, that Iupiter with Mercury or with the Sunne, enforceth rage of winds? What is he that perceiueth not the fearefull thunders, lightnings and raines at the meeting of Mars and Venus, or Iupiter and Mars? &c. Leaue for shame to oppugne these iudicials strongly authorised. He that any other part carpeth, may seeme more then mad. All truth, all experience, a multitude of infallible grounded rules are against him. *Certum est omnibus notum, quòd cœli motus, signorum ortus & occasus, planetarum aspectus & coniunctiones, luminarium Eclipses, &c. certissimam determinatam, ac infallibilem habent causam. Quis iam sanæ mentis negabit eorum effectus sæpe innotescere, vipote bella, fames, grandines, aeris perturbationes, elementorum commotiones, terræ motus, & similia? Positis causis naturalibus, & non impeditis, sequitur effectus.*

Orionis, Arcturi, Coronæ Capræ, Suculanum effectus.

♂ □ & ☌ ♄ cum ☉ & ☾. ♂ ☍ □ & ☌ cum ☿ aut cum ☉, &c.

The learned that listeth ingeniously to prognosticate of weather, will not onely discreetly wey all before written, but consider also with them the aspects of the Planets following, and their combustion in the 12. Signes, with the coniunction of fixed starrs, mansions of the Moone, Ascendent, Climes, &c. Also the times or quarters of the yeare must bee noted diligently, (as ensueth) and iudgement accordingly pronounced.

Of the yeare diuided into foure quarters.

The Spring time is hote and moyst and continueth so long as the Sunne is in Aries, Taurus, and Gemini, which is from the tenth of March vnto the 12. of June. The Summer is hote and dry, counted from the beginning of Cancer, to the ende of Virgo, that is from the 12. of June to the fourteenth of September. Harueste is colde and dry, counted from the beginning of Libra to the end of Sagittarie, counted from the 14. day of September to the thirteenth of December. Winter is cold and moyst, continued

♈ ♉ ♊ power ouer the brest. ♋ ♌ ♍.

♎ in ♐ ♑ are ♓ Power ouer all flames.

tinued from the beginning of Capricornus, to the end of Pisces, that is, from the twelfth of December, to the tenth of March.

Here follow the aspects of the Planets, for the better iudgement of weather.

BEfore I declare of Planets and the signification of aspects. it behoueth briefly to open what I call Planets, and what aspects, and how they are charactered and figured. Understand there bee seauen moueable Starres pleasant to the sight called Planets: the highest Saturne ♄: then Iupiter ♃: Mars ♂: Sunne ☉: Venus ♀: Mercurie ☿: and the Moone ☽, next to the Earth.

Now when I desire to expresse Saturne, I write this figure ♄. for Iupiter this ♃. for Mars this ♂. Thus of the other as their characters declare. All Radiations or Aspects are expressed as follow. A Coniunction is thus figured ☌. and it is when another Planet is ioyned with the Sunne or Moone, or others among themselues, within one degree or lesse.

The Sextile Aspect or Radiation, is thus expressed *, and it is within 60. degrees the one from the other. The Quadrate aspect thus □, 90. degrees distanant. The Trine thus △, separated 120. degrees. The Opposition thus ☍, 180. degrees the one is distant from the other.

Loe here they follow in order: the characters of the Planets and Signes also.

☌ * □ △ ☍

Coniunction, Sextile, Quadrate, Trine, Opposition.

♄ ♃ ♂ ☉ ♀ ☿ ☽

Saturne, Iupiter, Mars, Sunne, Venus, Mercurie, Moone.

♈ ♉ ♊ ♋ ♌ ♍

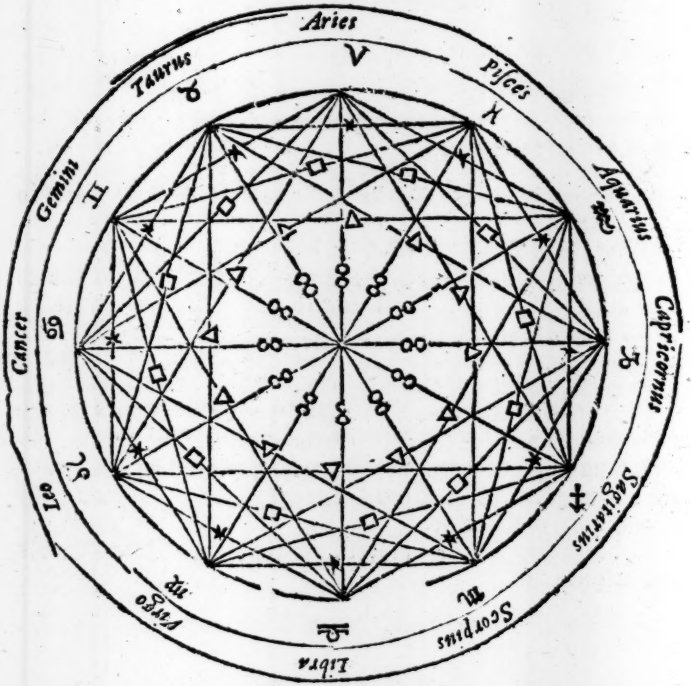
Aries, Taurus, Gemini, Cancer, Leo, Virgo,

♎ ♏ ♐ ♑ ♒ ♓

Libra, Scorpius, Sagittarius, Capricornus, Aquarius, Pisces.

A generall Prognostication

Yet for more plainenesse beholde this figure.



The signification of the aspects of Planets among themselues: for the iudgement of weather.

The conionction or meeting of Saturne with Iupiter, in fierie signes, enforceth great drought. In watry signes, floods, continuall raine, generall ouerflowings, &c. In ayrie signes, plenty of Windes.

The

The Quadrature, Sextile, or Oppoſition of Saturne with Iupiter, in moyſt Signes, cauſeth troubled ayre, by Hayle, Winde, Raine, Thunder, &c. before and after. ♄ □ * & ☌ cum ♃.

The Coniunction, Quadrature, or Oppoſition of Saturne with Mars, in watry Signes, declare in Summer raine, often ſhowers with haile, thunder and lightning. ♄ ☌ □ & ☍ cum ♂.

The Coniunction, Quadrature, or Oppoſition of Saturne with the Sunne, chiefly in cold Signes, ſhew dark weather, haile, raine, thunder and cold dayes. ♄ ☌ □ & ☍ cum ☉.

The Coniunction, Quadrature, or Oppoſition of Saturne with Venus, in Winter, engender colde and raine, principally in moyſt Signes: in Summer, mittigation of heate. ♄ ☌ □ & ☍ cum ♀.

The Coniunction, Quadrature, or Oppoſition of Saturne with Mercurie, in watrie ſignes, bring raine: in hote or drie Signes, drought: in Summer, thunder, lightnings and tempeſt. ♄ ☌ □ & ☍ cum ☿.

The coniunction, Quadrature, or Oppoſition of Iupiter with Mars, in moyſt Signes, declare thunders, lightnings and rayne: in winter ſnow, or clowdie thicke weather. ♃ ☌ □ & ☍ cum ♂.

The Coniunction, Quadrature, or Oppoſition of Iupiter with the Sunne, great and moſt vehement winds. ♃ ☌ □ & ☍ cum ☉.

The Coniunction, Quadrature, or Oppoſition of Iupiter with Venus, in moyſt Signes, colde and miſlings: in the other Signes faire weather. ♃ ☌ □ & ☍ cum ♀.

The Coniunction, Quadrature, or Oppoſition of Iupiter with Mercurie, great winds. ♃ ☌ □ & ☍ cum ☿.

The Coniunction, Quadrature, or Oppoſition of Mars with the Sunne, in fierie Signes, drought: in watrie, thunder and raine. ♂ ☌ □ & ☍ cum ☉.

The Coniunction, Quadrature, or Oppoſition of Mars with Venus, in moyſt Signes, raine, and tempeſt. ♂ ☌ □ & ☍ cum ♀.

The Coniunction, Quadrature, or Oppoſition of Mars with Mercurie, in hote Signes, great heate: in drie Signes, drought: in watrie, raine ſometimes, thunders, lightnings, with ſuddaine fierce winds. ♂ ☌ □ & ☍ cum ☿.

☿ ☌ □ & ☽ cum ☿. The Coniunction, Quadrature, or Oppositiõ of Venus with Mercurie, causeth raine: in Summer they prouoke tempest, the more if they agree in watrie Signes. Note what is sayd of the Coniunction, Quadrature or Oppositiõ, the same is also ment of the Sextile and Trine, but they are of lesse signification, so the learned noteth.

A declaration of weather by aspects of the Moone with the Planets.

☾ ☌ □ & ☽ cum ♄. The Coniunction, Quadrature, or Oppositiõ of the Moone with Saturne in moyst Signes, bringeth a clowdie day, colde ayre, according to the nature of the Signe: If she goe from Saturne to the Sunne, by coniunction or otherwise, harder weather ensueth.

☾ ☌ □ & ☽ cum ♃. The Coniunction, Quadrature, or Oppositiõ of the Moone with Iupiter in Aries or Scorpio, sheweth fayre weather, white dispersed clowdes.

☾ ☌ □ & ☽ cum ♂. The Coniunction, Quadrature, or Oppositiõ of the Moone with Mars in watrie Signes, raine. In hote Signes, diuers coloured clowdes are made all the Element ouer. In Summer often thunder.

☾ ☌ □ & ☽ cum ☉. The Coniunction, Quadrature, or Oppositiõ of the Moone with the Sunne in moyst Signes, rainie weather. The more if the Moone goe from the Sunne to Saturne.

☾ ☌ □ & ☽ cum ♀. The Coniunction, Quadrature, or Oppositiõ of the Moone with Venus, chiefly in moist Signes, raine followeth. The Moone going from Venus, and Mars, more varietie of weather.

☾ ☌ □ & ☽ cum ☿. The Coniunction, Quadrature, or Oppositiõ of the Moone with Mercurie in moyst Signes, sheweth raine an winde, the more when the Moone passeth from Mercury to Iupiter, then great winds follow.

How

How the weather is iudged by the Orientall and Occidentall ſtation of Planets, with their Combuſtion in the 12. Signes Celeſtiall.

Firſt of the Planets in Aries.

SATVRNE in Aries combuſt, that is to ſay, vnder the beames of the Sunne, maketh a clowdie darke troubled ayre. Orientall, I meane in the morning appearing before the Sunne, faire weather. Occidentall, that is to ſay, ſhewing himſelfe after the Sunne going downe, betokeneth great winds. ♄ in ♈

Iupiter in Aries combuſt, a token of raine: being Occidentall, it bringeth clowdes, and dewes: Orientall, faire pleaſant weather. ♃ in ♈

Mars in Aries combuſt and Occidentall, good weather: contrarie Orientall. ♂ in ♈

Venus in Aries combuſt Occidentall, moyſtneſſe, great winds: Orientall, thunders and raines. ♀ in ♈

Mercury in Aries combuſt, tempeſt: Occidentall and Orientall, faire windie weather. ☿ in ♈

Of Planets in Taurus.

SATVRNE in Taurus combuſt and ſtationarie, bringeth thicke clowdes, thunders and troubleſome weather. ♄ in ♉

Iupiter in Taurus combuſt, indifferent weather: Occidentall, pleaſant ſhowers. ♃ in ♉

Mars in Taurus combuſt, a quiet ayre: but Orientall, windie. ♂ in ♉

Venus in Taurus combuſt, thunders, &c. Occidentall, faire. ♀ in ♉

Of

Of the Planets in Gemini.

♄ in ♊ SATVRNE in Gemini combust and Occidentall, drought.

♃ in ♊ Iupiter in Gemini combust, a good signification.

♂ in ♊ Mars in Gemini combust and Occidentall, heate.

♀ in ♊ Venus in Gemini combust and Occidentall, winde.

☿ in ♊ Mercurie in Gemini combust, winde.

Of the Planets in Cancer.

♄ in ♋ SATVRNE in Cancer combust, darke weather, great windes and troublesome weathers: Occidentall, caulmer.

♃ in ♋ Iupiter in Cancer combust, bringeth caulme and pleasant weather.

♂ in ♋ Mars in Cancer combust, great heate.

♀ in ♋ Venus in Cancer combust, a quiet caulme time.

☿ in ♋ Mercurie in Cancer combust, tempestuous weather, chiefly on the Sea: Occidentall, caulmer.

Of the Planets in Leone.

♄ in ♌ SATVRNE in Leone combust, maketh winds and millings.

♃ in ♌ Iupiter in Leone combust, pleasant windes.

♂ in ♌ Mars in Leone combust, Occidentall, drought.

♀ in ♌ Venus in Leone combust, drought.

☿ in ♌ Mercurie in Leone combust, windes.

Of the Planets in Virgo.

SATVRNE in Virgine combuſt, is a ſignificatour of infirmities. ♄ in ♍

Iupiter in Virgine combuſt, manifeſteth abundance of things. ♃ in ♍

Mars in Virgine combuſt, like vnto Saturne. ♂ in ♍

Venus in Virgine combuſt, drought: Orientall, contrarie. ♀ in ♍

Mercurie in Virgine combuſt, drought, raging ſeas: Occidentall drought. ☿ in ♍

Of the Planets in Libra.

SATVRNE in Libra combuſt, ſheweth infirmitie of ſight: Orientall, cold windes. ♄ in ♎

Iupiter in Libra combuſt, indifferent weather. ♃ in ♎

Mars in Libra combuſt, bringeth moyſture. ♂ in ♎

Venus in Libra combuſt, moyſt ayre. ♀ in ♎

Mercurie in Libra combuſt, windes. ☿ in ♎

Of the Planets in Scorpione.

SATVRNE in Scorpio combuſt, ayre: Occidentall, froſt: Orientall, cold North windes. ♄ in ♍

Iupiter in Scorpio combuſt, raine: Occidentall, bitter weather. ♃ in ♍

Mars in Scorpio combuſt, declareth moyſture: Orientall, winds. ♂ in ♍

Venus in Scorpio combuſt, raine, both Occidentall, and Orientall. ♀ in ♍

Mercurie in Scorpio combuſt, raging weather, chiefly Orientall. ☿ in ♍

Of the Planets in Sagittarius.

♄ in ♐ SATVRNE in Sagittarius combuſt, cold raine ayre: Orientall, cold and froſt.

♃ in ♐ Iupiter in Sagittarius combuſt, much raine: Orientall worſe weather.

♂ in ♐ Mars in Sagittarius combuſt, drought.

♀ in ♐ Venus in Sagittarius combuſt, raine: Occidentall wind & cold.

☿ in ♐ Mercurie in Sagittarius combuſt, raine: Occidentall, cleare aire.

Of the Planets in Capricornus.

♄ in ♑ SATVRNE in Capricornus combuſt, ſignifieth dark weather, with South winds: Occidentall, cold: Orientall, north winds.

♃ in ♑ Iupiter in Capricornus combuſt, moyſt ayre: Occidentall, increaſing the ſame.

♂ in ♑ Mars in Capricornus combuſt, clowdie: Occidentall, ſome heat.

♀ in ♑ Venus in Capricornus combuſt, cold ayre: Orientall, raine.

☿ in ♑ Mercurie in Capricornns combuſt, raine both Orientall and Occidentall.

Of the Planets in Aquarius.

♄ in ♒ SATVRNE in Aquarius combuſt, cold ayre: Occidentall, dangerous ſeas: Orientall, raine.

♃ in ♒ Iupiter in Aquarius combuſt, Occidentall, raine.

♂ in ♒ Mars in Aquarius combuſt, drought: Occidentall, & Orientall, plentie of windes.

♀ in ♒ Venus in Aquarius combuſt, clowdie: Occidentall, hot: Orientall, raine.

☿ in ♒ Mercurie in Aquarius combuſt, ſnow: Occidentall, more cold: Orientall, raine.

Of

Of the Planers in Piſces.

SATVRNE in Piſces combuſt, bringeth cloudes: Occidental, raine. ♄ in ♓

Iupiter in Piſces combuſt Orientall, cauſme waters. ♃ in ♓

Mars in Piſces combuſt Occidentall, drought: Orintall, lightning and thunders. ♂ in ♓

Venus in Piſces combuſt, cold: Occidentall, diſpoſed to ſnow. ♀ in ♓

Mercurie in Piſces combuſt, moyſt ayre. ☿ in ♓

Thus much of the iudgement of weather.

SEeing that I haue now ſufficiently declared how, by what rules and tokens weather is iudged: I thinke it conuenient to adioyne here a briefe collection, how Plenty, Scarcity, Sicknes, Death, Alterations, Troubles, Warres, &c. are for euer perceiued.

A rule to prognoſticate the aforeſayd by the falling of Newyeares day.

IT is affirmed of ſome, when Newyeares day falleth on the Sunday then a pleaſant Winter doth enſue: a naturall Summer: fruite ſufficient: Harueſt indifferent, yet ſome winde and raine: many mariages: plentie of wine and honey: death of young men, and cattell: robberies in moſt places: newes of Prelates, of Kings: and cruell warres in the end. Sunday.

ON Munday, a Winter ſomewhat vncomfortable: Summer temperate: no plentie of fruite: many fancies and fables opened: agues ſhall raigne: Kings and many others ſhall dye: Mariages ſhall be in moſt places: and a common fall of Gentlemen. Munday.

ON Tueſday, a ſtormy Winter: a wet Summer: a diuers Harueſt: corne and fruite indifferent, yet hearbes in gardens ſhall not flourith: great ſickneſſe of men, women, and young children. Tueſday.

Beasts shall hunger starue, and dye of the botch: many Shippes, Gallies and Hulkes shall be lost: And the bloodie Flixes shall kill many men: All things deare, saue corne.

Wednesday. ON Wednesday, Lo a warme winter: In the end Snow and frost: a clowdie Summer, plentie of fruite, of Corne, Hay, Wine and Honey: great paine to women with childe, and death to infants: good for shéepe: newes of Kings: great warres, battell and slaughter toward the middest.

Thursday. ON Thursday, Winter and Summer windie: A rainie Harnest: Therefore we shall haue ouerflowings. Much fruite: plentie of honey: yet flesh shall be deare: cattell in generall shall dye: great trouble, warres, &c. with a licentious life of the feminine sexe.

Friday. ON Friday, Winter stormie: Summer scant pleasant: Harnest indifferent: little store of fruite, of wine and honey: corne deare: many bleare eyes: youth shall dye: Earthquakes are perceiued in many places: plentie of thunders, lightnings, and tempests: with a sudden death of cattell.

Saturdy. ON Saturday, a meane Winter: Summer very hot: a late Harnest: good cheape garden hearbs: much burning: plenty of Hempe, Flaxe, and honey. Olde folke shall dye in most places: Feuers and Tercians shall grieue many people: great muttering of warres: murthers shall be suddenly committed in many places for light matters.

NOw that I haue opened diuers waies, both for the learned and vnlearned, how weather to come at all times may be well iudged and knowne, &c. I thought it méete, for further knowledge therein, not to omit here the naturall causes of such and so many alterations of ayre. Lo, therefore orderly they follow.

Naturall

Naturall cauſes, conducing to all the aforeſayd: and firſt of the Rainebow.

The Rainbow is the ſhining and rebounding of beames of light, that turne to the contrarie vapour againe in the cloude. It declareth ſometime raine, and many times fayre weather: when the one, and how the other, is before opened.

Of Raine.

RAine is a cold vapour, an earthly humour, or fumoſities, out of waters or earth drawne vp by the vertue of the Sunne, to the neather part of the middle ſpace of the ayre, there through cold thicked, then diſſolued: Thus engendred falleth on the earth.

Here I leaue to ſpeake of miraculous raines, as Milke, Blood, Fleſh, Yron, Wooll, &c. For more ſatiſfying in theſe, reade in the ſecond booke, 58. chapter. Quare lapides pluant, lege Plin. lib. 2. cap. 44. Plinius

Of Froſt and Dew.

A Cold moyſt vapour, a little way drawne vp in the day throw faint heate of the Sunne, deſcendeth in the night, diſſolued on the earth, there congelated or reſolued into water, the one called Froſt, the other Dew. The laſt is a ſigne of fayre weather in the Spring or Harueſt. Ros æſtate, pruina hyeme fit.

Of Snow.

IT is a moiſt vapour, drawne vp to the middle region of the ayre, then thicked, and frozen into the bodie of a clowde: So congelated deſcendeth. Nix, humor modicè concretus.

Of Hayle.

A Clowde reſolued into water, in the fall congelated, maketh Hayle. The higher it commeth from aboue, and the longer it tarieth in the ayre, the rounder hayle. Grando pluuia in deſcenſu congelata.

A generall Prognostication

Of Windes.

Ventorum ergo materia, calida & ſicca exhalatio.

WInde is a multitude of dry exhalations, drawne vp from the earth: and aboue the earth enforced here and there.

Of Earthquakes in the moſt quiet time.

Quemadmodum in nube tonitruum, ſic in terra tremor.

PLentie of windes, entred into holes, cones, or caues of the earth, which abſent from aboue the earth cauſeth quietneſſe: the violent bruſting out of them (the earth cloſed againe) is the Earthquake: Signum eſt futurorum bellorum.

Tokens of Earthquakes to come.

Signa terræmotus.

AFirie clowde, appearing in the element like a little pillar, is a token of Earthquakes to come. The obſcurity or darkenes of the Sunne, without clowdes, and ſtrangely coloured, bloodie or otherwiſe, is a token of Earthquakes.

Alſo when Well water and others are troubled, or ſalt, or infected by ſauour, &c.

A great quietnes of ayre by land and ſea, and chiefly the long abſence of winds.

Alſo ſtrange noyſes heard, as clamours of men, ruſhing of harneſſe, mournings, lamentations, &c. All theſe haue been obſerued to ſignifie Earthquakes at hand.

Of thunders and lightnings.

Fulgetrum prius cerni, quàm tonitrum audiri, cùm ſimul fiant certum eſt, Plin. lib. 3. cap. 56. contra. Ariſto.

THunder is the quenching of fire in a clowde. Or thunder is an exhalation hote and dry, mixt with moyſture, carried vp to the middle region, there thicked and wrapped into a clowde: of this hote matter coupled with moyſtnes cloſed in the clowde, groweth a ſtrife, the heate beating, and breaking out the ſides of the clowde with a thundring noyſe: the fire then diſperſed is the lightning.

Thus for the learned: *Tonitruum ſonitus eſt, qui editur quando nubem rumpit halitus. Fulmen flamma, vel repentinus eſt ignis, qui ex colliſione nubium, aut ruptura naſcitur.* Ariſtotle affirmeth the lightning after thunder, but the fire doth firſt appeare, in that the ſight is before the hearing. If this ſatisfie not, reade the ſecond of his Meteoron. Here followeth a note of lightnings.

There

There be three kinds of Lightnings, drie, moyſt, and cleare.

DRie doe not burne but cleaue, part or diuide. Moyſt, burne not, but alter colour. The cleare are of marueilous natures: Full barrels by it are emptied. It melteth money in the purſe, it breaketh the ſword, the purſe and ſcabberd not periſhed, yea, waxe in them vnmolten. Note.

Of the Comets or flames in the night.

A Comet is a flame working in a drie, hote ſlimie exhalation, drawne vp to the higheſt part of the ayre. His matter or ſubſtance after it is burnt, and diſperſed, prouoketh windes. Ventorum cauſa.

The naturall cauſe of the Sunne eclipſed.

NOthing elſe is the Eclipſe of the Sunne, but the direct putting the body of the Moone betweene the Sun and the earth, or betweene our ſight and the Sunne, which chaunce onely at the chaunge.

A Corollarie.

BY this, gather the darkeneſſe at Chriſts death no to ſtande by naturall ecliptical cauſe: but by ſupernaturall, or myracle. Miracle.
For it was at the full Moone, Scriptures witneſſe: which enforced Dioniſius Areopagitâ at the time of his paſſion, to ſpeake thus: *Aut Deus naturæ patitur, aut mundi machina diſſoluitur.*

The cauſe of the Moone eclipſed.

THe Sunne being in the contrarie poynt to the ful Moone, enforceth the ſhadow of the earth then directly put betweene the Sunnes and the Moone, toward the Moone, hiding more or leſſe of the Moone, as ſhe differeth from the Ecliptical. Some obſerue peſtilent plagues, ſudden battell, great dearth, to enſue theſe Eclipſes: which all I deſire God to auert from his choſen. Many other things by theſe Eclipſes are gathered, as Longitudes of Countreyes, the Quantitie of the Sunne, containing the bigneſſe of the Earth 162. tymes: the compaſſe of the Vniuerſalis eſt Eclipſis Lunæ. Non ſemper in nouilunio, ſed in capite & cauda.

the earth 21600. miles: whose thickenesse, according to Archimedes rule is 6872. miles, and eight eleuenths of a mile.

Omnium planetarum ad terram magnitudo.

The quantitie of the Moone is the 43. part of the earth.
The Sunne containeth the Globe of the Moone 7000. times.
Saturnus comprehendeth the bignes of the earth 91. times.
Iupiter, 65. times. Mars, once, and ten sixteenths. Venus, the 37. part. Mercurius, one. 32000. part of the earth.

Note here, that Alfraganus affirmeth the least fixed Starre perfectly seene, is bigge as the whole earth.

HÆc non erunt admirationi, si globi capacitatem ex longitudine diametri quæsieris. Continet enim solis dimetiens terræ dimetientem quinquies & semissem. Est autem proportio diametri Solis ad terræ dimetientem, quæ est numeri vndecim ad duo, quintupla sesquialtera. Cubus solis mille tercentum vnam & triginta partes tales continet, cuiusmodi terræ cubus octonas complectitur. Cubus enim numeri vndecim, est mille tercentum vnum & triginta. Cubus verò binarij, qui est terræ, octo. Subducto quoties id fieri potest, minore cubo qui est terræ, à maiore qui est solis, cognoscitur cubi ad cubum proportio, & quanto Sol maior terra sit. Inuenimus ergo octo centies, sexagies sexies, in mille tercentum vno & triginta.

Dimetiens ☉ ad terræ dimetientem vndecim ad duo.

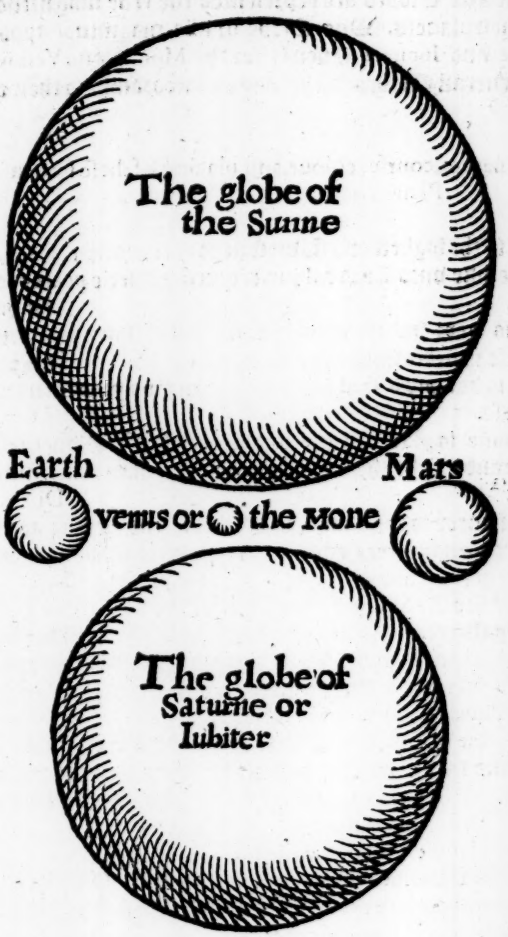
Cubus ☉ 13. 13. Terræ, 8.

Terræ Diametros Lunæ dimetiens complectitur ter, & duas eius diametri portiones quintas: est autem ea proportio dimetientis terræ ad Lunæ diametrum, quæ est septendecim ad quinque tripla superbi partiens quintas. Cubus numeri septendecim est quater mille nonagenta terdecim. Cubus numeri quinque est centum viginti quinque. Maiore cubo per minorem distributo, reperimus numerum certum viginti quinque, tricies nouies in quater mille nonagentis terdecim: quod paululum à superioribus obseruationibus differt.

Dimetiens terræ ad diam. ☽ 17. ad 5 Cubus terræ 14913. Cubus ☽ 125.

The quantities or rather true proportion of all the Planets vnto the earth, ocularly demonstrated by figure following.

The



Mercurie is but a poynt in reſpect of theſe quantities.

By these fiue Globes are represented the true magnitudes of the seuen planets. One Globe or like magnitude appointed for Saturne and Iupiter: Euen so for the Moone and Venus: the rest haue seuerall Globes (as ye may see) according to their quantities.

The nature, course, colour, and placing of these seauen Planets, according to Ptolomie.

♄ SAturne is the highest and slowest in proper motion, colde, drie, and pale, like vnto Lead colour, requiring thirtie yeares to end his course. Di.9.ad.2.

♃ IVpiter is next vnder Saturne, temperate, faire and bright: his course is performed in 12 yeares. Di.32.ad.7.

♂ MArs is hot and drie of fierie colour, in two yeares endeth his course. Di.7.ad 6.

☉ THe Sunne is placed in the middle of all the Planets: most cleere and bright, the well of pure light: euery yeare finishing his course. Di.11.ad 2.

♀ VEnus is next to the Sunne, colde, moyst, and cleere: yea more bright then Iupiter, her course is like vnto the Sunnes: neuer aboue 48. degrees from the Sunne: called the morning starre when she goeth before the Sunne, comming after the Sunne she is named the euening starre. Di.3.ad 10.

☿ MErcurie is next vnder Venus, somewhat shining, but not verie bright: neuer aboue 29. degrees from the Sun, his course is like to Venus, or the Sunnes motion.

☽ THe Moone is lowest of al the seauen, running ouer the whole Zodiake in 27. dayes, and eight houres, and somewhat more. Di.5.ad.7.

For more plainnesse of that which is opened, now shall follow a figure, by the which ye may perceiue how the Orbe of the one Planet compasseth the other. Also, how these Planets are placed in the heauen: yea, which Planets is highest from the earth, and which neerest vnto vs. Consider wel this figure, so needeth no farther declaration.

THE LEARNED DO APPOYNCTE THE ABITACLE OF GOD: AND ALL THE ELECTE & HERE
The fyrst Mouer
The cristallyne Heuen
The sterrie firmament
Saturne
Iuppiter
Mars
Sunne
Mercurie
Venus
Moone

By these fiue Globes are represented the true magnitudes of the seuen planets. One Globe or like magnitude appointed for Saturne and Iupiter: Euen so for the Moone and Venus: the rest haue seuerall Globes (as ye may see) according to their quantities.

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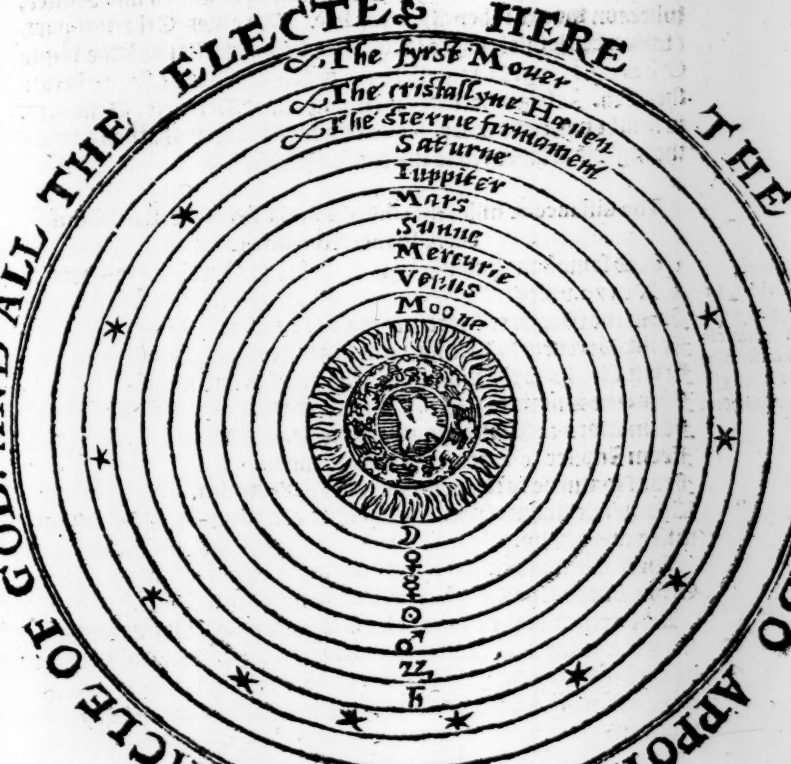


THE LEARNED DO APPOYNCTE THE ABITACLE OF GOD: AND ALL THE ELECTE & HERE

Ye may here behold first th Elementall part subiect vnto alteration, consisting of the foure Elements, first Earth and Water, whereon we are: then Ayre and fire. The other Etheriall part, (which the Philosophers cal quinte essence) containeth the tenne Orbes: the bigger compasseth the next lesser, as the figure before sheweth. It beginneth at the Moone, then Mercurie, Venus, &c. in height more and more. As the figure declareth Saturne to bee the highest Planet: so is the Moone lowest.

The distance or miles that the Moone is from the Earth and euery Planet from other.

Hæc incredibilia videntur tantum ijs qui Mathematicis demonstrationibus non assueuerunt, &c.

As some haue published, it is from the Earth to the Moone, 1570. miles.
From the Moone to Mercurie, is 12812. miles.
From Mercurie to Venus, as many miles.
From Venus to the Sunne, is 23437. miles and a halfe.
From the Sunne to Mars, is 15725. miles.
From Mars to Iupiter, is 18721. miles.
From Iupiter to Saturne, as many miles.
From Saturne to the firmament, 120485. miles.
The whole summe from the Earth to the Firmament, is 358463 miles and a halfe.

Here Demonstration might bee made of the distance of these Orbes, but that passeth the capacitie of the common sort.

The naturall operations of these Planets by coniunction, oppositition &c. ensueth: but more largely of me opened in a pleasant booke shortly to bee published. First here will I end the naturall causes of many Sunnes and Moones: then of the Planets by coniunction.

The naturall causes of many Sunnes or Moones.

Milichius noteth the king of Pole to haue seene 6. Suns at once.

These come to passe, when a thicker clowde is gathered toward the side of the Sun or Moone, in the which the broken beames of the Sunne do leaue the fashion and very forme of that Sunne. Thus as followeth, sayth Plinius in his second booke of the historie of Nature, and 31. chapter. No more Sunnes are perceiued in our time then three: and they are neuer seene, either aboue or beneath

neath the Sunne, but on the sides: neuer in the night, but onely at the Sunne rising or going downe.

What is to be chosen or auoyded vnder euery aspect of the Moone, with her signification in the 12. signes touching the same.

The Coniunction, Quadrature, or Oppositition of Saturne with the Moone, causeth an euill vnluckie day for all maters. Leaue therefore to haue to doe any manner way: nothing shall prosper or come well to passe then attempted. Yet the Sextile or Trine of Saturne with the Moone, declareth a conuenient time to til, delue, or digge, to sow, to lay foundations, to erect or repayre houses, yea, a meete time to obtaine suites of fatherly farmers. The Moone in Capricornus or Aquarius, bringeth this latter effect of the Sextile and Trine. ♄ ☌ ☐ & ☍ cum ☽ ♄ ✶ △ cum ☽ ☽ in ♑ vel ♒

The Coniunction, Sextile, Trine, Quadrature or Oppositition of Iupiter with the Moone, sheweth a fortunate day, chiefly to obtaine suites of Kings, noble Princes, Prelates, of Lawyers and Religious persons: and a meete time to studie, to iourney, to take an honest matter in hand. The Moone in Taurus, in Leo, or Sagittarius, sheweth the same. ♃ ☌ ✶ △ ☐ vel ☍ cum ☽ ☽ in ♉ ♌ vel ♐

The Coniunction, Sextile, Trine, Quadrature or Oppositition of Mars with the Moone, warneth thee not to match thy selfe that day with warriours: notwithstanding very good and most meete to finish all maner fierie workes: naught to iourney: yet most conuenient for valiant Captaines to worke their feate: to leade, encourage or stomache their souldiers: most vnmeete to treate peace, to take seruants, or to seeke friendship. ♂ ☌ ✶ △ ☐ vel ☍ cum ☽

The Coniunction, Quadrature or Oppositition of the Sunne with the Moone, declareth a very vnhappie day for all matters: therefore attempt nothing, ne any manner suite, neither plant, build, ne iourney. Yet the Sextile and Trine are very fortunate, specially to obtaine suite of Kings, Princes, and other Nobles. The Moone in Aries, enforceth the effect of this latter part. ☉ ☌ ☐ vel ☍ cum ☽ ☽ in ♈

♀ ☌ ✶ △ □ vel ☾ cum ☽ The Coniunction, Sextile, Trine, Quadrature, or Opposition of Venus with the Moone, causeth a day most apt to obtaine all suites of women, good to woo, to attempt mariage, and to follow al manner of pleasures, and pleasant pastimes: not vnmeet to hire seruants, to let blood, &c. The Moone in Libra or Pisces prouoketh the like.

☿ ☌ ✶ △ □ vel ☾ cum ☽ The Coniunction, Sextile, Trine, Quadrature or Opposition of Mercurie with the Moone, promiseth a fortunate happie day to buy and sell: very good to enter children in liberall Arts: an apt time for the Merchant: good to vse Merchandise, to iourney, to send embassage, to giue accounts, and such like.

☽ in ♊ ♌ vel ♏. The Moone in Gemini, Cancer, or Virgo, enclineth euen to the same aforesayd.

☽ ☊ The Moone with the Dragons head, sheweth a luckie day for all matters: with the taile, contrarie.

Now ensueth a table shewing what Signe the Moone is in, and shall be for euer: declaring also the meetest time to let blood, to purge and to bathe.

The Table hath at the head seuen titles. The first moneths: the second dayes: then the Prime: the twelue Signes: the times to let blood, to purge, and to bathe.

Here is to be noted, that those dayes are good for these purposes, which be signed with this letter G. and those euill dayes, that are noted with B.

A table for letting of blood, &c.

This Table declareth for euer, in what Signe the Moone is or shall be at any daye in the yeare. It serueth also very well to let Bloud, to Purge, and Bathe.

Monethes.	Daies.	Prime.	The 12. Signes.	To let Bloude	To Purge.	To Bathe.
Febr. Nouc.	1	3	Aries.	G	B	G
Marche.	2		Aries.	G	B	G
	3	14	Taurus.	B	B	B
Decembre.	4	6	Taurus.	B	B	B
	5		Gemini.	B	G	
Aprill.	6	17	Gemini.	B	G	
	7	9	Cancer.		G	G
Maie.	8	1	Cancer.		G	G
	9		Cancer.		G	G
	10	12	Leo.	B	B	G
	11	4	Leo.	B	B	G
Iune.	12		Virgo.	B	B	B
	13	15	Virgo.	B	B	B
Iuly.	14	7	Libra.			
	15		Libra.			
	16	18	Scorpius.		G	G
	17	10	Scorpius.		G	G
Auguste.	18	2	Scorpius.		G	G
	19		Sagittarius	G		G
	20	13	Sagittarius.	G		G
	21	5	Capricornus	B	B	B
Septembre.	22		Capricornus	B	B	B
	23	16	Aquarius.			G
Ianua. Octo.	24	8	Aquarius.			G
	25		Pisces		G	G
	26	19	Pisces.		G	G
	27	11	Pisces.		G	G

SEeke out vnder the titles of the Moneths, the name of the moneth, whose day you must loke out right against the moneth, vnder the title of daies, and there begin to tel downewards, 1.2.3.&c. to the end, if it so require, and then from the beginning, if neede be, vntill ye haue reckoned the number of the day that you seeke. Looke what number it falleth vpon in this table vnder the title of daies, that number keepe in minde. Then seeke vnder the title of the Prime, the Golden number for the yeare, right against that, leftward vnder the title of dayes: begin to tell downwards, 1.2.3.&c. vntill you haue reckoned the number which you did keepe in minde. Against that, towards your right hand vnder the the title of Signes, is the signe wherein the Moone shall bee that day. Euen then vnder the other titles, ye shall finde in right order for letting Blood, for puring and bathing, according as they be noted with G. which is good, and B. signifying bad.

Example.

The first day of March in the yeare of our Lord 1555. I desire to know what celestical signe the Moone doth then occupy. I find first the name of the moneth, that is March: and the day as followeth, in the next order of this table. I begin here to tell right against my moneth, at the figure of 2. saying, 1.2.3.&c. so I haue at the end and count of sixe daies this figure 7. which I keep in mind. Now I must seeke out the Golden number for the yere aforesaid, vnder the title of the Prime here, that is 7. against the which on the left side is 6. There ye must beginne againe to count 1.2.3.&c. vntill you come to your number 7. So on your right hand in the row or order, you shall see Virgo, the celestical Signe that the Moone is in: and after that these three leettrs B. which declare bad, or euill to let Blood, to Purge, or Bathe, agreeable to the titles in the head G. there had signified good.

Forasmuch as letting of Blood, Purging, and Bathing, Inundations, Floods, Timberfalling, Sowing, Planting, Grafting, Cutting, &c. depend chiefly on the Signe wherein the Moone is, which I haue euen before plainly opened: I thought it meete to haue them now orderly touched as followeth.

A conducible note for letting blood.

LEt blood at no time without great cause, for it bringeth weakneſſe and many infirmities. If ye doe, ſee it be after good digeſtion, and faſting, in a faire temperate day. Beware before of all manner exerciſes, bathings, watchings, and carnal copulation, &c. After vſe fine meates, of light digeſtion, abſtaining from all the aforeſayd, vntill the fourth day. Malum minui, vel purgationibus vti, tempore caloris, propter defectum humoris.

Theſe Signes are moſt dangerous for blodletting, the Moone being in them: Taurus Gemini, Leo, Virgo, and Capricornus, with the laſt halfe of Libra, and Scorpius. The reſt are all good, ſo the Moone beare no dominion in that member which ye cut: as followeth. Ill to let blood in ♉ ♊ ♌ ♍ ♑

Behold this figure.

The Dominion of the Moone in mans body.

Aries.	The	Head, and Face.
Taurus.		Necke.
Gemini.		Armes, Hands, Shoulders.
Cancer.		Breast, Stomacke, Ribbes.
Leo.		Heart, Backe.
Virgo.		Bowels, Belly.
Libra.		Raynes, Naull, Buttockes.
Scorpius.		Secret members.
Sagittarius.		Thighes.
Capricornus		Knees.
Aquarius.		Shinnes, Legges.
Pisces.		Feete.

From the change to the first quarter, a meete time to let young men blood.
From the first quarter to the full, good for middle age.
From the full to the last quarter, apt for aged folke.
From the last quarter to the change, best for old men.

Signes meete for the Complexions.

Aries. Sagittarius.	For the Flegmatike: the Head, and Thighes excepted.
Libra. Aquarius.	For Melancholike: Buttockes, and Legges excepted.
Cancer. Scorpius. Pisces.	For Cholerike: Breast, Members, and Feete excepted.

Hæc diligentissimè observare oportet solertem Medicum, nisi maiora pericula cogant.

For the Sanguine, all be apt that before are named good.

In the Spring time, let blood at the right side.
In Harueſt time, at the left side.

The learned Phiſition will conſider, beſide all that is ſayd, the Coniunctions, Oppoſitions, and Quadrat aſpects of the Planets: with

with many other things Astronomicall, most necessarie, both in blood-letting, purging, bathing, &c.

For to take purgations, and to bathe.

The meetest time to take purgations, &c. is neither in hote, nor cold dayes: that is, from the tenth of March, to the twelfth of June.

Further by rules Astronomicall, it must bee performed when the Moone is in cold, moyst, and watrie signes, as Cancer, Scorpius, and Pisces: comforted by aspects and radiations of Planets, fortifying the vertue of the bodie expulsiue. Good to purge ♋ ♏ ♓

The Moone in Aries, Taurus, and Capricornus, naught. One cause of vomiting the purgation is, if the Moone haue aspect to any Planet retrograde. Bad to purge. ♈ ♉ ♑

The Moone in these Signes following, very good to bathe: Aries, Leo, Sagittarius, Cancer, Scorpius, and Pisces. Good to bathe ♈ ♌ ♐ ♋ ♏ ♓.

These ensuing are euill to bathe, Taurus, Virgo, Capricornus. Bad to bathe ♉ ♍ ♑

Of Inundations or floods: of timber felling, sowing, planting, grafting, haire clipping, shauing, and gelding.

The flood is biggest at the full: because then dispersing her vertue, she filleth all places with moysture. By common experience ioyned with learning I knowe, at the full, the Moone lodeth all bodies with humors: and so are emptied, growing to the change. Of this some gather the fall of timber at the chaunge, more to the purpose then other times, wanting the superfluous moisture, the cause of putrifaction, *Omnis putredo ab aqueo humido ortum habet.* Schoner willeth from the 15. day vnto the 22. day of the Moone trées to be felled, and that after Midsomer to January. So timber is strong, sound, and voyd of wormes. The fall of Timber.

To sowe: Taurus, Cancer, Virgo, Libra, and Capricornus, are best in the increase of the Moone. Good to sow. ♉ ♋ ♍ ♎ ♑

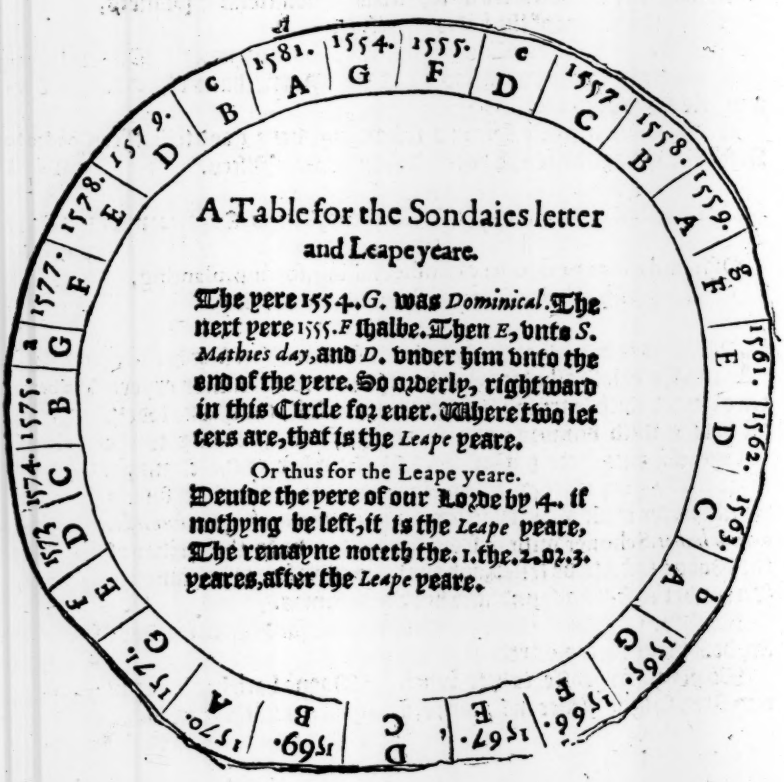
To plante or grafte, is best when the Moone hath her being in any fixed Signe, either in Taurus, or Aquarius in the increase. To plant or graffe. ♉ ♒

To cut haire ♉ ♌ ♎ Hayne cut groweth well, the Moone encreasing, being in Taurus, Virgo, or Libra.

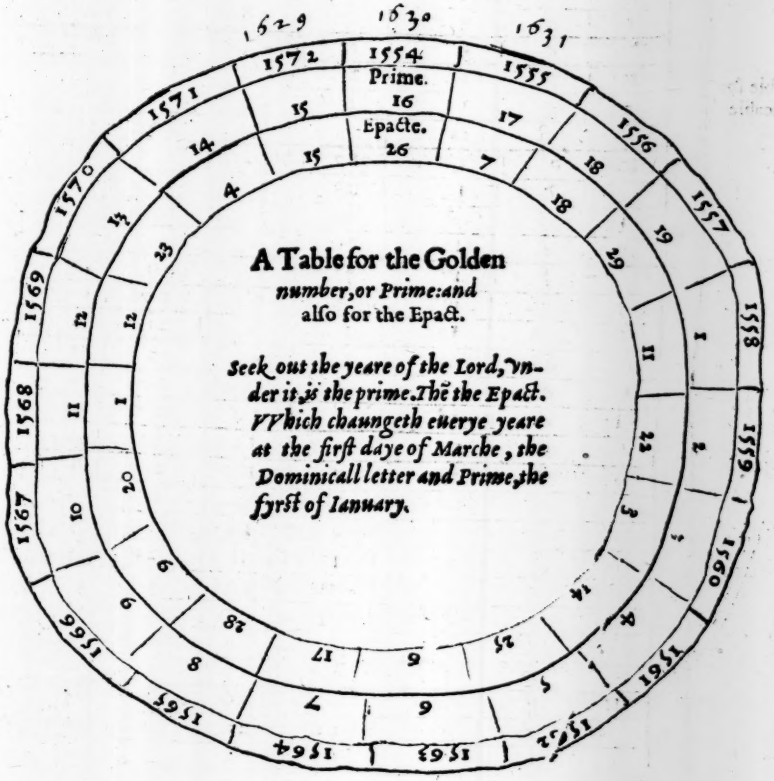
Cutting, Shauing, Clipping, in the wane causeth baldnesse: what is then cut, groweth litle. *Caluitium prohibet oleum Tartari.*

The best time of Cutting is in Cancer, Scorpio, or Pisces, in the wane.

These two rounde Tables that nowe ensue, conduce to the rest following



When yee haue gone rounde about the yeares, of these two Tables, begin againe.



A Table for the Golden *number, or Prime: and* also for the Epact.

Seek out the yeare of the Lord, vnder it, is the prime. The the Epact. Which chaungeth euerye yeare at the first daye of Marche, the Dominicall letter and Prime, the fyrst of Ianuary.

A table for moueable feasts.

The prime.	The sondaies letter.	The first Lent sonday.	Easter daye.	Rogation.	whitsontide.	Betwixt whitsond. & midso.	
16		Februarie.	Marche.	April.	Maye.	wek.	daies
5	d	8	22	26	10	6	3
	e	9	23	27	11	6	2
13	f	10	24	28	12	6	1
2	g	11	25	29	13	6	0
	A	12	26	30	14	5	6
10	b	13	27	May. 1.	15	5	5
	c	14	28	2	16	5	4
18	d	15	29	3	17	5	3
7	e	16	30	4	18	5	2
	f	17	31	5	19	5	1
15	g	18	April. 1	6	20	5	0
4	A	19	2	7	21	4	6
	b	20	3	8	22	4	5
12	c	21	4	9	23	4	4
1	d	22	5	10	24	4	3
	e	23	6	11	25	4	2
9	f	24	7	12	26	4	1
	g	25	8	13	27	4	0
17	A	26	9	14	28	3	6
6	b	27	10	15	29	3	5
	c	28	11	16	30	3	4
14	d	Marche. 1.	12	17	31	3	3
3	e	2	13	18	Iune. 1.	3	2
	f	3	14	19	2	3	1
11	g	4	15	20	3	3	0
	A	5	16	21	4	2	6
19	b	6	17	22	5	2	5
8	c	7	18	23	6	2	4
	d	8	19	24	7	2	3
	e	9	20	25	8	2	2
	f	10	21	26	9	2	1
	g	11	22	27	10	2	0
	A	12	23	28	11	1	6
	b	13	24	29	12	1	5
	c	14	25	30	13	1	4

The vſe of this Table appoynted for the moueable Feaſts.

This Table containeth, in the firſt title the Prime: in the ſecond, the Dominicall letter: in the third, Lent: in the fourth, Eaſter day: in the fift, Rogation day: in the firt, Whitſunday: in the ſeuenth, how many weekes and dayes are betweene Whitſunday and Midſommer. Which all appeare by their titles.

Ye ſhal conſider by the little round Table before put forth, what number the Prime is that yeare, whereof ye require to knowe all theſe aforeſayd: and ſeeke that number vnder the firſt title of this Table enſuing. Then ſeeke vnder the ſecond the Dominical letter, next after the Prime for that yeare: which title enueth the Prime. Directly againſt the ſame Dominicall letter, towards your right hand, in the ſame line, ye ſhall finde vnder the titles, what moneth and day, euery one of theſe aforeſayd ſhall happen.

Example.

I would know this yeare of our Lorde 1555. These moueable Feaſts: the firſt Lent Suday, Eaſter day, Rogation dayes, Whitſunday, and how many weekes betwixt Whitſunday and Midſommer day. Firſt I finde the Prime this yeare 17. which 17. I looke out vnder the title of Prime in the Table before. Then I ſeeke in the next order, and after the Prime, for the Dominicall letter that yeare. Now in right order, according to the title, I finde the third of March to bee the firſt Lent Sunday: the 14. of Aprill Eaſter day: the 12. of May Rogation: the 2. of June Whitſunday: and 3. weekes and 1. day betwixt Whitſunday and Midſummer day. Thus for euer.

How

How to know the age of the Moone then the chaunge, and quarter for euer.

By the Prime the change is knowne, but vncertainely: therefore here omitted.

FIrſt learne the Epact (as I haue inſtructed) for that yeare ye ſeeke to know the age of the Moone, then reckon how many dayes are paſt of the moneth, which day ye deſire to know the age. Put that number to the Epact. Then begin at March, and reckon for euery moneth from him orderly one, vntil your ſaid day, including both the moneth of March, and alſo the moneth of your ſayd day. Adde all theſe dayes vnto your former number, putting away as many thirtie dayes as ye finde. The reſt is the age of the Moone. The age found, the chaunge is knowne. If ye adde ſeuen dayes to the change, yee haue the firſt quarter: then ſeauen dayes, and ſomewhat more, sheweth the full: and ſo to it adding ſeuen and more, bringeth the laſt quarter thus, by ſeuen vnto the new Moone.

Example.

In anno Biſextili vnum adde

The tenth day of January, the yeare then being 1555. I deſire the age of the Moone, I finde the Epact vntill March enſuing to be twentie fiue, that added vnto tenne, maketh thirtie fiue, then eleuen for the moneths from March to January, including both moneths, bringing fortie ſeuen: now thirtie pulled away, leaueth ſeuenteene the age of the Moone.

Now enſue the perfect Tables, declaring the true houre and minute of ebbing and flowing in moſt coaſts of England.

Example.

The first day of Ianuarie, I desire all the aforesaid: that is, the breake of the day: the very minute of the Sunne rising, the length of the day, and also of the night: the Sunne going downe, and the twylight. I finde on the right hand of Ianuarie these numbers running downe, 1.10.20. which declare the first day, the 10. day, and twentith of that moneth. Now to my purpose. I require the breake of the day, &c. The first of Ianuarie in the Table, vnder the title, on the right hand of this figure 1, I see 5. houres, and 54. minutes, that is fiue of the clocke wanting 6. minutes. The rising of the Sunne in that order, is iust at eight, as this figure 8. there declareth vnder that title in the row. The length of the day, eight houres: the length of the night 16. houres: the Sunne setting is at foure: the twylight at 6. and 6. minutes. Euen thus for the tenth day, and also for the twentith of that moneth, in the rowes according to their titles in the head of my Tables.

How to worke by proportion, when the day is not found.

I Would know all the aforesaid: the first day of Ianuarie, I take for example the breake of the day. Remember the first day of Ianuarie, I did finde the breake to be at fiue of the clocke and 54. minutes: and the tenth day I may finde the breake of the day to bee at 5. and 44. minutes, that is 10. minutes lesse. I see now 10. daies doe giue me 10. minutes lesse: I see therefore (by proportion) the fift day must giue 5. minuts lesse than 5. houres 54. minuts: which is 5. houres, 49. minutes my request. Thus for all the other titles.

The houre of the night by the Moone, is otherwise found than before, and that diuersly.

How by the Moone the night houre is found.

THe houre of her rising knowne, as is opened, and a mark then made where she shadoweth, in any true fixed or moueable Sun diall, the houres and minutes from that marke all the night after are to be added to her rising. If more than 12. surmount, only that aboue 12. sheweth the true houre and minute. If at the rising she may not be seene, then by the Sunne rising, in that very Signe (with the helpe of this Almanack) you may perceiue what houre she would note at her rising. Therefore from that marke, count.

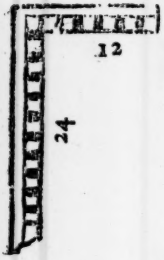
An other way.

Of ebbing and flowing.

WHen the moone is at the full, looke what houre her shadow sheweth in any Dial, that is the houre of the night. After she is past the full 28. houres, ye must adde one houre: But afore the full, pull one from that yee finde in the Diall. If twise 28. two houres, &c. so haue ye the houre of the night.

How the houre of the day, by Right shadow, that is, by any thing directly standing vp, is knowne: and by Squire shadow also.

FIrst it behoueth you to haue a Staffe, or any other thing diuided in 12. equall parts. When ye list to haue the houre, set vp directly your deuided Staffe on a plaine leuell ground, or boord, &c. Note the iust length of the shadowe, what parts it containeth. With those enter your moneth in the peculiar Kalendar following: beholding diligently vnder the name of the moneth, the small enclosed Tables: considering well, which of those small Tables are neerest vnto your day: and that iudge by the signe, or day there noted. That table serueth your purpose: where you must looke out the parts of the shadow afore found, or neere vnto it: vnder or ouer the which the houre is set, before or after noone. Note the two prickes there, signifie halfe a part more then is noted: one pricke, halfe a part lesse. Here it is also to be noted, that euery table hath within, two rowes of figures: the vpper is for the Staffe, the other for the Squire shadow. And whatsoeuer is before said of the one, that same is meant here of the other, sauing of the Composition.



The Squire must be deuided from the inward angle to the ende of one side, in 12. equall parts: euen so from that angle the other side into 24. like parts, as this figure sheweth.

These to the wittie suffice.

The composition of an Instrument for the houre of the night: which is also a perfect Diall for the day, and excellent for the Mariner.

THe taking of an Altitude supposed, I could gladly in few (and that without an Instrument) satisfie. For want of ỹ knowledge,

The vse of these Tables.

When you will know the full Sea, seeke out the name of the place, where you desire the full water, in the head of the Tables: or learne the poynts of the Compasse there noted: or if you list, know of some mariner, what Moone maketh a full sea there: a Southwest or South Moone. &c. Then ỳ age of ỳ Moone found vnder ỳ place or point of ỳ compasse, sheweth in right order the houre and minute of the full water. The ebbe then is manifest.

Example.

I desire to know the full water at London bridge, the yeare of our Lord 1555. the first day of February. I finde by rules before put forth, the 6 day of February the yeare aforesayd, the Moone to bee 14. dayes olde. I see also vnder the title where London is S.W. which letters signifie that a Southwest Moone maketh a ful Sea there: and that is at 2. of the clocke, and 12. minutes past. This is well perceiued in the first Table before put forth, if you run downe to ỳ 14. day of the age of the Moone, vnder Lõdon title.

A note of the houre of the day and night.

The ingenious may gather neere about the houre of the day and night, by the Moone: consideration had of the poynts in those Tables of tydes before noted. For the houre is orderly put vnder the poynt of the compasse.

Euery part or poynt containing 11. degres and $\frac{1}{4}$: this compasse is wel figured neere about the Centre in the instrument following for the night houre, because ye may by it haue a delectable large vse of these tide tables.

How by the first of the tide tables, ye may readily know when the Moone commeth into the South, when she riseth and setteth: with her continuance on the earth.

Seeke the age of the Moone (as is opened) then resort to the first tide table, looking out that age there: So vnder the South poynt in right order the houre appeareth, when she commeth vnto the South. Then hath she spent halfe that arcke that the Sun would haue had in that Signe, which pulled away, sheweth the rising: that halfe arcke also added to her comming vnto the South, declareth her going downe. The arck then that the Sun would haue had in the signe, is her continuance on the earth.

A Table at all times plainly and briefly declaring the breake of the day: the houre and minute of the Sunne rising: the iuſt length of the day: the length of the night alſo: the very minute of the Sunne ſetting: and the twylight.

Monethes	Dayes.	Break of the day.	Sunne ryſinge.	Lengthe of the day	Lẽgthe of the night	Sunne ſettinge.	Twy-lyghte.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Iune.	10	6 0	8 11	7 37	16 23	3 49	6 0
	20	5 58	8 10	7 40	16 20	3 50	6 2
Iuly.	1	5 54	8 0	8 0	16 0	4 0	6 6
	10	5 44	7 49	8 21	15 39	4 11	6 16
	20	5 35	7 34	8 52	15 8	4 26	6 25
Aug.	1	5 15	7 13	9 34	14 26	4 47	6 45
	10	5 0	6 56	10 8	13 52	5 4	7 0
	20	4 50	6 36	10 47	13 13	5 24	7 10
Sept.	1	4 20	6 19	11 22	12 38	5 41	7 40
	10	4 0	6 1	11 58	12 2	5 59	8 0
	20	3 40	5 41	12 37	11 23	6 19	8 20
Octo.	1	5 8	5 18	13 23	10 37	6 42	8 52
	10	2 40	5 1	13 57	10 3	6 59	9 20
	20	2 10	4 43	14 33	9 27	7 17	9 50
Nouẽ.	1	1 30	4 25	15 9	8 51	7 35	10 3
	10	0 30	4 12	15 35	8 25	7 48	11 30
	20	Cõtinuall day.	4	0 15	59 8	1 8	0 Day continuall.
Dece.	1		3 51	16 17	7 43	8 9	
	10		3 48	16 23	7 37	8 12	
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.

Dayes.	Monethes.
10	Iune.
1	Dece.
20	Nouẽ.
10	Octo.
1	Sept.
20	Aug.
10	Iul.
1	Iune.

Minutes to be added, to the Length of the daye.

| | | |

Quin South-ampton. Ports-moth	Redban Aberdē	Graues ende.	Dūdee. S And.	Age of the Moon.	London Tinmot Hertle pole.	Ber-wyke.	Erith. Lyeth. Dūbar.	Falmot
South.	S b w.	S S w.	S w b S		S w.	S w b w	w S w	w b S.
H. M.	H. M.	H. M.	H. M.	☽	H. M.	H. M.	H. M.	H. M.
12 48	1 33	2 18	3 3	1	3 48	4 33	5 19	6 3
1 36	2 21	3 6	3 51	2	4 36	5 21	6 6	6 51
2 24	3 9	3 54	4 39	3	5 24	6 9	6 54	7 39
3 12	3 57	4 42	5 27	4	6 12	6 57	7 42	8 27
4 0	4 45	5 30	6 15	5	7 0	7 46	8 30	9 15
4 48	5 33	6 18	7 3	6	7 48	8 33	9 18	10 3
5 36	6 21	7 6	7 51	7	8 36	9 21	10 6	10 51
6 24	7 9	7 54	8 39	8	9 24	10 9	10 54	11 39
7 12	7 57	8 42	9 27	9	10 12	10 57	11 42	12 27
8 0	8 45	9 30	10 15	10	11 0	11 45	12 30	1 15
8 48	9 33	10 18	11 3	11	11 48	12 33	1 18	2 3
9 36	10 21	11 6	11 51	12	12 36	1 21	2 6	2 51
10 24	11 9	11 54	12 39	13	1 24	2 9	2 54	3 39
11 12	11 57	12 42	1 27	14	2 12	2 57	3 42	4 27
12 0	12 45	1 30	2 15	15	3 0	3 45	4 30	5 15
12 48	1 33	2 18	3 3	16	3 48	4 33	5 18	6 3
1 36	2 21	3 6	3 51	17	4 36	5 21	6 6	6 51
2 24	3 9	3 54	4 39	18	5 24	6 9	6 54	7 39
3 12	3 57	4 42	5 27	19	6 12	6 57	7 42	8 27
4 0	4 45	5 30	6 15	20	7 0	7 45	8 30	9 15
4 48	5 33	6 18	7 3	21	7 48	8 33	9 18	10 3
5 36	6 21	7 6	7 51	22	8 36	9 21	10 6	10 51
6 24	7 9	7 54	8 39	23	9 24	10 9	10 54	11 39
7 12	7 57	8 42	9 27	24	10 12	10 57	11 42	12 27
8 0	8 45	9 30	10 15	25	11 0	11 45	12 30	1 15
8 48	9 33	10 18	11 3	26	11 48	12 33	1 18	2 3
9 36	10 21	11 6	11 51	27	12 36	1 21	2 6	2 51
10 24	11 9	11 54	12 39	28	1 24	2 9	2 54	3 39
11 12	11 57	12 42	1 27	29	2 12	2 57	3 42	4 27
12 0	12 45	1 30	2 15	30	3 0	3 45	4 30	5 15
North.	N b E	N n E	N e b N	☽	N E	N e b E	E n E	E b N.

The first table for the Tides.

Foy Lin. Hũber. weimot. Dertm. Plimot.		Briſto.		Milfo. Bridg⁹ water.		Portl. Peter. porte.		Age of the Moone.	Orkn. Pole. Or⁹ wel.		Diep. Lux. Le⁹ noys.		Bologg. Douer. Harwick Yarmot.		Calice.	
Eaſt.		EbS.		EsE		SebE			SE		ScbS		SsE		SbE	
H.	M.	H.	M.	H.	M.	H.	M.	☽	H.	M.	H.	M.	H.	M.	H.	M.
6	48	7	33	8	18	9	3	1	9	48	10	33	11	18	12	3
7	36	8	21	9	6	9	51	2	10	36	11	21	12	6	12	51
8	24	9	9	9	54	10	39	3	11	24	12	9	12	54	1	39
9	12	9	57	10	42	11	27	4	12	12	12	57	1	42	2	27
10	0	10	45	11	30	12	15	5	1	0	1	45	2	30	3	15
10	48	11	33	12	18	1	3	6	1	48	2	33	3	18	4	3
11	36	12	21	1	6	1	51	7	2	36	3	21	4	6	4	51
12	24	1	9	1	54	2	39	8	3	24	4	9	4	54	5	39
1	12	1	57	2	42	3	27	9	4	12	4	57	5	42	6	27
2	0	2	45	3	30	4	15	10	5	0	5	45	6	30	7	15
2	48	3	33	4	18	5	3	11	5	48	6	33	7	18	8	3
3	36	4	21	5	6	5	51	12	6	36	7	21	8	6	8	51
4	24	5	9	5	54	6	39	13	7	24	8	9	8	54	9	39
5	12	5	57	6	42	7	27	14	8	12	8	57	9	42	10	27
6	0	6	45	7	30	8	15	15	9	0	9	45	10	30	11	15
6	48	7	33	8	18	9	3	16	9	48	10	33	11	18	12	3
7	36	8	21	9	6	9	51	17	10	36	11	21	12	6	12	51
8	24	9	9	9	54	10	39	18	11	24	12	9	12	54	1	39
9	12	9	57	10	42	11	27	19	12	12	12	57	1	42	2	27
10	0	10	45	11	30	12	15	20	1	0	1	45	2	30	3	15
10	48	11	33	12	18	1	3	21	1	48	2	33	3	18	4	3
11	36	12	21	1	6	1	51	22	2	36	3	21	4	6	4	51
12	24	1	9	1	54	2	39	23	3	24	4	9	4	54	5	39
1	12	1	57	2	42	3	27	24	4	12	4	57	5	42	6	27
2	0	2	45	3	30	4	15	25	5	0	5	45	6	30	7	15
2	48	3	33	4	18	5	3	26	5	48	6	33	7	18	8	3
3	36	4	21	5	6	5	51	27	6	36	7	21	8	6	8	51
4	24	5	9	5	54	6	39	28	7	24	8	9	8	54	9	39
5	12	5	57	6	42	7	27	29	8	12	8	57	9	42	10	27
6	0	6	45	7	30	8	15	30	9	0	9	45	10	30	11	15
VVeſt.		wbn		wnw		nwbw		☽	nw		nwbn.		nnw		nbw	

ledge, make vpon a plaine boord, or rather fine plate, a Circle: the bigger the better: part it into 360 portions, thus.

The Circle made diuide it in 6. not mouing the compasse: then euery of them in 6. and each of those last in 10. so haue you 360. parts. Then charactor it, beginning at the North thus 10. 20 30. &c. (as in the figure) going towarde the East, and ending at the North with 360. Now lay a ruler on a Centre, euen with some diuisions, drawing thorow to the extreames of the Circle a line. Then crosse that with another. These two must diuide your circle in 4. equall parts: which lines shew the very East, West, North and South, when by a Meridian or square diall, with a needle rectified, they are placed.

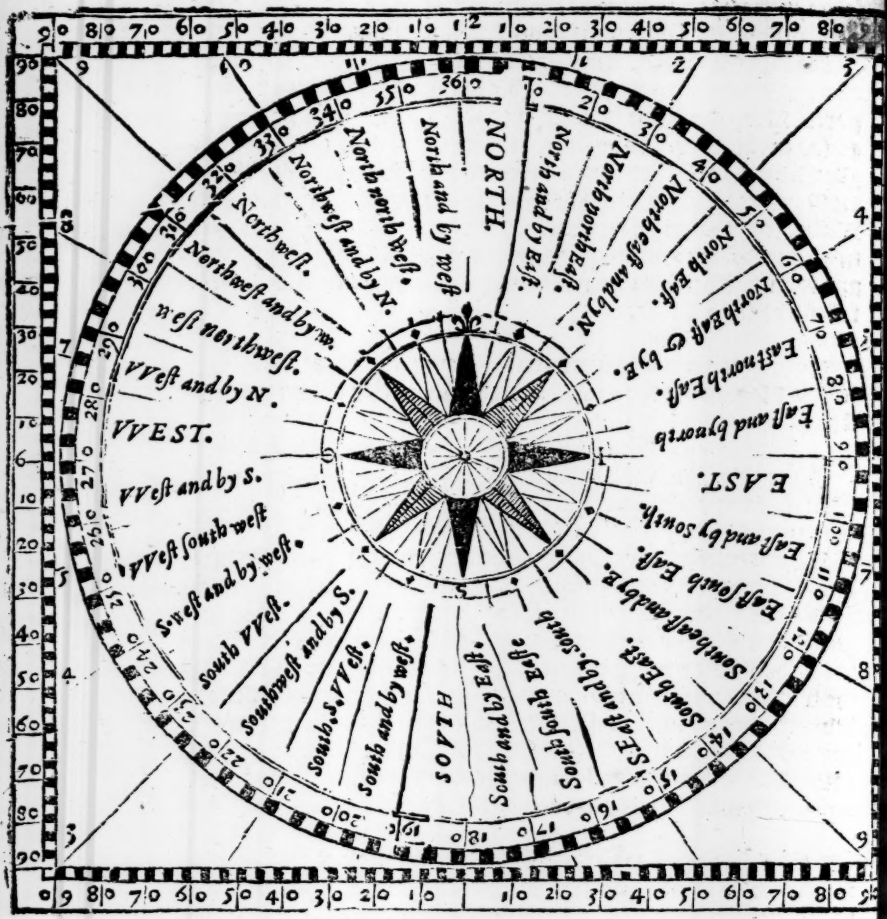
Now to the end, set a small straight wier, a foote or more long with a Vane in the top, plum vpright in the Centre: and there fasten it.

Thus this Instrumēt is finished, to be fixed about your house, equidistant or leuell with the Horizon: hauing a needle if ye list, in it, truly to plage it, when and where you will.

That it may be also a Diall for the day, you must pull straight lines from ỳ extremitie of your circle outward, to euery fifteenth part: decking them with Charactors conuenientlie as ye see the figure, your rule keeping the Centre. Thus when the Sunne shineth, the shadow of the wier sheweth the true houre: the Vane, the windes, &c. being truly plaged, well placed, and reared as followeth. The points of the compasse are drawn within the circle, and about the Centre euery point containing 11. degrees and a halfe. The instrument as you see is enclosed round about with a Square, for the Mariners ayde.

Truly few words cannot expresse the excellencie of this Square for their vse: No otherwise to bee opened, then learned Gemma hath inuented and plainly declared: here omitted of me, not fully occasioned now to write that way. I haue appoynted a meeter place for this and like matter. In the meane time I am readie in word and deede, to further the desirefull in this or any other.

Profitable Rules



Beholde this instrument for Nauigation most commodious, the vse of which is here only put forth according to my inuention.

The right rearing and placing of the Diall tofore mentioned.

LIft vp handsomely your Instrument or Diall toward the North in some meete place, the side of a squire lying on it, vntill the plummet and line, centred in the extreame vpper part of the other side of your Squire like long, cut all that Squire side which lieth on your Instrument, the fift part onely except: Then moue your Instrument, hither and thither, this or that way, vntil the shadow of the wire fall vpon the houre of ẏ day, keeping diligently your height before. Your Diall thus fixed, declareth all the yeere long, the exact houre and parts thereof. No Diall in trueth excelleth this. Haue in remembrance, that this Instrument must lie leuell, nothing at al reared, for the houre of the night by starre.

In winter the cõtrary superficies or Plain, sheweth the day houre frõ ♎ to ♈

To get the exact houre by two Starres of the first light, with an Instrument or Circle, tofore diuided, first of me inuented, calculated and practised.

THe Instrument equidistantly set and plaged, as is declared in composition, ye ought to lay the edge of a ruler vnto the wire, the other nether end touching the Instrument, mouing here and there still touching the wire, vntill either Starre doth offer it selfe with that edge, and that by the iudgement of the eye. Then put downe discreetly your ruler (euer touching the wire) the hinder end not mooued, obseruing how many parts are cut from the North, to the edge of the Ruler. Enter with them the peculiar Kalendar following: seeking out your moneth, placed in the middest of euery Table: then the day of that moneth must bee there found.

Fit filo aut digito, absque regula exactissimè.

Note that euery table hath on the sides, the daies thus ordered 1.5.10.15.20.25.30. Know, the order or row of figures which is right against, or neerest your day, serueth the turne. The number or parts before cut by the ruler, and now found in the row of your table, sheweth the precise houre. If it be too little, that houre ouer the head or vnder is not yet come: if contrarie, it is past.

How these two bright ſtarres, being of the firſt light, are found: the one called Aldebaran or Oculus Tauri, the other Alramech.

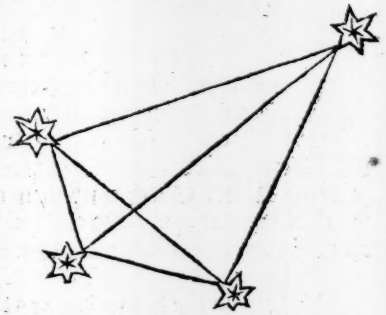
By what meanes theſe Starres are knowne.

The beſt way is thus: The moneth and day knowne with the true houre of the night, enter your Table conſidering that moneth and day, obſerue what parts belongeth there to that ſtarre and houre. Then reſort to your Inſtrument, laying the edge of your ruler, as many parts from the North Eaſtward, circumſpectly lifting vp the edge cloſe by the wire, ſo the fayre ſtarre ſhineth euen with that edge.

Or thus groſly.

Another way to finde them.

Oculus Tauri is euer a meete rod and a halfe to the eye vnder the ſeuen ſtarres, and ſomewhat North of them in the riſing: Alramech is contrarie to him plaged, accompanied with three little dimme ſtarres, a rod from him by the iudgement of the ſight: in the forme of a Triangle, thus.

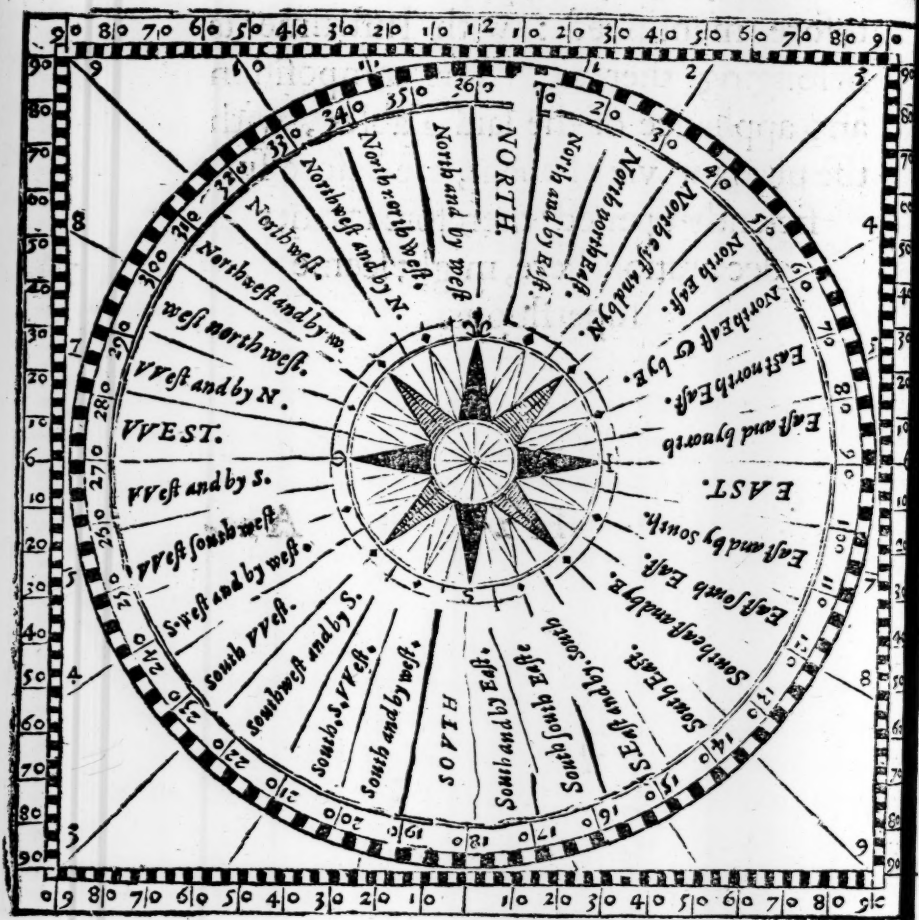


Behold this figure: the great Starre dooth repreſent Alramech: the other three in the Triangle, which is placed alwayes with him, but commonly there doth appeare but one Starre of the Triangle.

Now

NOW ENSVETH THE needefull, neceſſarie, peculiar Kalendar tofore mentioned: with Inſtruments belonging thereto. The compoſition and appliance of the ſaid Tables, with the pleaſant vſe of them, are before ſufficiently opened: therefore further declaration here, might ſeeme ſuperfluous.

A neceſſarie Inſtrument to finde exactly the houre of the day and night diuers waies, with the helpe of this peculiar Kalendar.



For the night. From midnight vnto day. From euening to midnight.

	5	6	7	8	9	10	11	12					
1	108	113	143	165	190	213	59	79					
5	112	129	150	172	197	220	63	47					
10	113	136	158	183	206	227	68	78					
15	123	144	166	192	214	233	71	81					
20	130	151	173	199	220	239	75	86					
25	137	158	183	207	228	244	79	90					
30	144	165	191	213	233	249	82	91					

Oculus Tauri.

Ianuary hath xxxj. dayes.

81	93	105	121	143	168	196		1
86	96	110	127	151	177	205		5
89	101	116	135	160	139	214		10 Alramech.
93	105	122	143	169	198	213		15
98	111	128	152	179	207	230		20
10	116	135	159	190	216	286		25
190	121	144	168	193	222	242		30
1	2	3	4	5	6	7		

Alramech.

		12	11	10	9	8	7			H	
10	Staffe	26	39	49	83	550	0			shad.	0
	Squire	4	4	3	2	0	0			shad.	
	H	0	1	2	3	4	5				

For the day.

		12	11	10	9	8	7			H	
20	Staffe	32	34	42	65	209	0			shad.	10
	Squire	4	4	3	2	1	0			shad.	
	H	0	1	2	3	4	5				

gr. xxx

		12	11	10	9	8	7			H	
30	Staffe	27	29	35	119	0				shad.	0
	Squire	5	5	4	3	1				shud.	
	H	0	1	2	3	4	5	0			

Oculus Tauri.

Alramech.

Alramech

For the night.

From midnight vnto day.

From euening to midnight.

	6	7	8	9	10	11	12	
1	169	194	216	62	73	83	95	
5	174	199	222	64	25	86	98	
10	184	207	228	68	79	70	102	
15	191	214	234	71	82	94	106	
20	198	220	233	75	86	93	111	
25	205	226	243	78	88	110	116	
30								

February hath xxviij. dayes.

1	108	124	146	172	201	225		
5	111	129	153	180	207	231		
10	117	136	126	190	216	227		
15	122	144	169	158	223	213		
20	128	152	278	206	230	248		
25	134	159	188	214	236	252		
30								

1 2 3 4 5 6

For the day.

8 Staffe / Squire — H

12	11	10	9	8	7			H
23	25	30	42	80	6	6		shad. shad. 0
6	6	5	3	2	0			
0	1	2	3	4	5			

18 Staffe / Squire — H

12	11	10	9	8	7			H
20	21	25	54	61	226			shad. shad. 10
7	7	6	4	2	1			
0	1	2	3	4	5			

gr.

28 Staffe / Squire — H

H	12	11	10	9	8	7			
	17	18	22	29	45	112			shad. shad. 20
	8	8	6	5	3	1			
H	0	1	2	3	4	5			

	7	8	9	10	11	12			
1	50	70	81	93	15	120			
5	62	74	84	95	108	125			
10	65	76	87	99	113	131			
15	69	80	91	103	118	138			
20	72	83	94	107	123	146			
25	75	86	98	112	129	153			
30	80	90	102	117	136	161			Alramech.

For the Night. — *From euening to midnight.*

March hath xxxj. dayes.

142	168	196	222	241				1
47	173	201	227	245				5
155	183	210	232	250				10
63	192	218	238	255				15
71	200	225	243	259				20
180	208	232	249	262				25
191	26	237	254	267				30 Alramech.
1	2	3	4	5	6			

From midnight vnto day.

For the day.

		12	11	10	9	8	7				H	
11	Staffe	15	16	19	24	37	74				shad.	0
	Squire	9	9	8	6	4	2				shad.	
	H	0	1	2	3	4	5					

		12	11	10	9	8	7	6			H	
21	Staffe	13	14	16	21	30	54	221			shad.	10
	Squire	11	10	9	7	5	2	1			shad.	
	H	0	1	2	3	4	5	6				

		12	11	10	9	8	7	6			H	
31	Staffe	11	12	14	18	26	43	112			shad.	20
	Squire	12	12	10	8	5	3	1			shad.	
	H	0	1	2	3	4	5	6				

gr. ♈

Alramech.

For the night. — From euening to midnight.

	6	7	8	9	10	11	12						
1	92	104	118	138	164								
5	94	107	123	145	171								
10	98	111	129	153	180								
15	101	117	125	160	189								
20	106	122	144	168	198								
25	111	128	152	178	207								
30	117	135	159	189	215								

Aprill hath xxx. dayes.

From midnight vnto day.

103	218	230	255									1
199	225	244	258									5
207	231	248	262									10
215	236	253	266									15
223	243	257	270									20
230	248	262	274									25
236	252	266	278									30
1	2	3	4	5								

Alramech.

For the day.

		12	11	10	9	8	7	6		H	
10	Staffe	0	11	13	16	23	36	76	—	ſhad.	0
	Squire	14	13	11	9	6	4	2	—	ſhad.	
	H	0	1	2	3	4	5	6			

		12	11	10	9	8	7	6		H	
21	Staffe	9	9	11	15	21	31	58	267	ſhad.	10
	Squire	16	15	12	9	7	4	2	1	ſhad.	
	H	0	1	2	3	4	5	6			

		12	11	10	9	8	7	6	5	H	
31	Staffe	8	8	10	14	19	28	49	139	ſhad.	20
	Squire	18	17	14	10	7	5	3	1	ſhad.	
	H	0	1	2	3	4	5	6	7		

gr. 8

For the Night.

	8	9	10	11	12				
1	117	136	160	190	216				
5	120	142	168	196	222				
10	128	152	178	206	230				
15	134	159	188	214	235				
20	143	168	169	222	211				
25	151	177	206	230	248				
30	160	189	215	235	253				

From evening to midnight.

May hath xxxj. dayes.

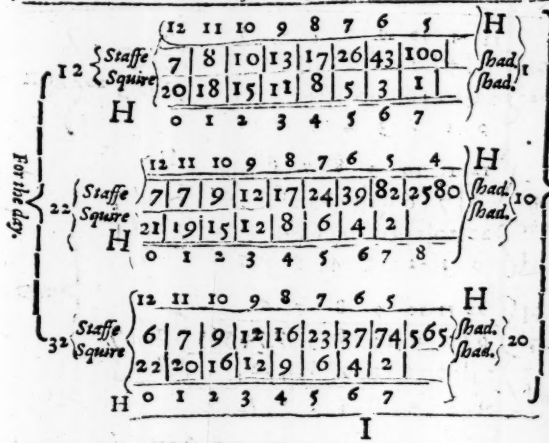
From midnight vnto day.

1	237	253	267	278					
5	241	256	269	280					
10	247	261	273	285					
15	252	266	278	288					
20	257	270	281	292					
25	262	274	285	296					
30	266	278	288	300					

1 2 3 4 5

1 Alramech.

For the day.



For the Night.

From euening to midnight.

	8	9	10	11	12				
1	161	191	261	237	254				
5	169	197	223	242	257				
10	180	207	231	249	262				
15	191	216	237	254	267				
20	199	224	243	259	271				
25	207	231	249	262	275				
30	216	237	254	267	279				

Alramech.

Iune hath xxx. dayes.

From midnight vnto day.

269	279	290	301					1
270	282	292	303					5
274	285	297	308					10
279	290	301						15
283	293	304						20
286	297	308						25
290	301	382						30

Alramech.

1 2 3 4 5

For the day.

1 Staffe / Squire / H

12	11	10	9	8	7	6	5	4	H	
6	7	9	12	16	23	37	47	56	5	shad.
22	20	16	12	9	6	4	2	0		shad.
0	1	2	3	4	5	6	7			

20 gr. ☌

12 Staffe / Squire / H

12	11	10	9	8	7	6	H	
6	7	6	12	16	23	36	72	453	shad.
22	20	16	12	9	6	4	2	0	shad.
0	1	2	3	4	5	6	7	8	

9

23 Staffe / Squire / H

H	12	11	10	9	8	7	6		
	6	7	9	14	16	23	37	74	565	shad.
	22	20	16	12	9	6	4	2		shad.
H	0	1	2	3	4	5	6	7	8	

10

gr. ☍

From euening to midnight.

	8	9	10	11	12				
1	219	239	255	263	280				
5	225	244	259	272	283				
10	233	250	264	275	286				
15	238	254	267	279	290				Alramech.
20	243	258	271	283	293				
25	249	262	275	226	297				
30	254	267	279	290	300				

For the night.

Iuly hath xxxj. dayes.

From midnight vnto day.

1	290	302	83						Alramech.
5	293	304	86						
10	267	79	90						
15	301	82	93						
20	304	86	98						
25	308	89	101						Oculus
30	82	93	106						Tauri.
	1	2	3	4	5				

For the day.

3 Staffe / Squire: 12 11 10 9 8 7 6 5 4 H | 7 7 9 12 16 24 39 82 2580 | 21 19 15 12 8 6 4 2 | H 0 1 2 3 4 5 6 7 8 — shad. shad. 0

14 Staffe / Squire: 12 11 10 9 8 7 6 5 H | 7 8 10 13 17 26 43 100 | 20 18 15 11 8 5 3 1 | H 0 1 2 3 4 5 6 7 — shad. shad. 0

24 Staffe / Squire: 12 11 10 9 8 7 6 5 H | 8 8 10 14 19 28 49 139 | 18 17 10 7 5 3 1 | H 0 1 2 3 4 5 6 7 — shad. shad. 10

gr. ♌

I 2

Alramech.

Oculus Tauri.

For the night.

From midnight vnto day.

	8	9	10	11	12				
1	255	267	279	291	302				
5	259	272	284	294	304				
10	263	275	286	297	79				
15	267	279	290	300	81				
20	270	282	292	303	86				
25	274	285	296	303	88				
30	278	288	299	81	92				

From euening to midnight

Auguſt hath xxxj. dayes.

	82	94	107	122	141				1
	86	98	111	126	146				5
	89	102	116	132	154				10
	93	105	119	138	160				15
	96	110	125	144	167				20
	100	114	130	152	174				25
	104	118	136	158	183				30
	1	2	3	4	5				

Oculus Tauri.

For the day.

3 Staffe / Squire / H

12	11	10	9	8	7	6	5	H
9	9	11	15	21	31	58	207	Shad.
16	15	12	9	7	4	2	0	Shad.
0	1	2	3	4	5	6	7	

20 gr. ♌

14 Staffe / Squire / H

12	11	10	9	8	7	6	H
10	11	13	16	23	36	72	Shad.
14	13	11	9	6	4	2	Shad.
0	1	2	3	4	5	6	

0

24 Staffe / Squire / H

H	12	11	10	9	8	7	6	
	11	12	14	18	20	43	111	Shad.
	12	12	10	8	5	3	1	Shad.
	0	1	2	3	4	5	6	

10

gr. ♍

For the night.

From midnight vnto day.

From euening to midnight.

	7	8	9	10	11	12							
1	267	279	290	301	82	93							
5	270	281	292	303	85	96							Alramech.
10	273	285	296	307	88	100							
15	271	287	293	80	91	104							
20	208	291	302	83	94	103							
25	284	295	305	87	99	105							Oculus Tauri.
30	287	297	80	91	103	117							

September hath xxx. dayes.

106	120	139	161	186								1	
109	124	194	166	192								5	
113	129	150	173	199								10	
117	135	155	180	204								15	
123	142	164	189	212								20	Oculus Tauri.
128	149	171	195	219								25	
134	155	180	204	215								30	
1	2	3	4	5	6								

For the day.

		12	11	10	9	8		H			
3	Staffe	13	14	16	21	30	54	221		shad.	20 gr. my
	Squire	11	10	9	7	5	3	0		shad.	
	H	0	1	2	3	4	5	6			

		12	11	10	9	8	7			H		
14	Staffe	15	16	19	24	37	73				shad.	0 gr. ij
	Squire	9	9	8	6	4	2				shad.	
	H	0	1	2	3	4	5					

		12	11	10	9	8	7			H		
4	Staffe	17	18	22	29	45	112				shad.	10
	Squire	8	8	6	5	3	1				shad.	
	H	0	1	2	3	4	5					

Alramech.

Oculus Tauri.

Oculus Tauri.

For the night.

From evening to midnight.

	6	7	8	9	10	11	12						
1	277	288	298	80	92	104	117						
5	279	290	302	82	94	107	122						
10	284	94	305	86	98	111	127						
15	286	68	79	90	102	116	133						
20	290	71	82	93	106	121	140						
25	294	75	86	98	111	126	146						
30	297	79	90	102	116	132	154						

October hath xxxj. dayes.

From midnight vnto day.

1	135	157	181	205	226	243							1
5	141	262	288	210	231	247							5
10	147	270	195	218	237	252							10
15	154	178	202	225	242	256							15
20	162	186	210	230	246	260							20
25	169	194	217	235	251	264							25
30	177	202	224	241	255	268							30

For the day.

		12	11	10	9	8	7			H		
4	Staffe	20	21	25	34	61	206			shad.	20	gr. 4
	Squire	7	7	6	4	2	0			shad.		
	H	0	1	2	3	4	5					

		12	11	10	9	8	7			H		
14	Staffe	23	25	30	42	79	6896			shad.	0	gr. 14
	Squire	6	6	5	3	2	0			shad.		
	H.	0	1	2	3	4	5					

		12	11	10	9	8				H		
24	Staffe	27	29	35	19					shad.	10	
	Squire	5	5	4	3	1				shad.		
	H	0	1	2	3	4						

For the night. — *From eueningto midnight.*

	5	6	7	8	9	10	11	12					
1	287	298	80	92	104	117	135	156					
5	290	302	82	94	107	122	147	163					
10	294	305	87	98	111	127	147	117					Alramech.
15	298	80	91	103	117	135	156	180					
20	303	83	95	108	123	142	165	189					
25	307	88	100	113	129	105	173	198					Oculus
30	81	92	104	119	136	158	183	206					Tauri.

Nouember hath xxx. dayes.

From midnight vnto day.

[illegible]	205	[illegible]	[illegible]	[illegible]	[illegible]	281	292					1	
188	211	231	24[illegible]	261	273	285	296					5	
196	218	237	252	265	[illegible]	[illegible]						10	
204	225	243	257	269	281	[illegible]						15	
213	232	248	261	274	285	297						20	Oculus
220	238	253	266	278	290	12[illegible]						25	Tauri.
227	244	258	270	282	293	135						30	
1	2	3	4	5	6	7	8						

For the day.

		12	11	10	9					H		
2	*Staffe*	32	34	42	65	209				*shad.*	20	gr. ♏
	Squire	4	4	3	2	1				*shad.*		
	H	0	1	2	3	4						

		12	11	10	9	8				H		
13	*Staffe*	36	39	49	83	550				*shad.*	0	gr. ♐
	Squire	4	4	3	2	0				*shad.*		
	H	0	1	2	3	4						

		12	11	10	9					H		
22	*Staffe*	40	45	57	104					*shad.*	10	
	Squire	3	3	2	1					*shad.*		
	H	0	1	2	3							

Oculus Tauri.

For the night. — *From evening to midnight.*

	5	6	7	8	9	10	11	12					
1	81	92	115	119	136	158	183	107					
5	84	96	109	124	144	166	192	214					
10	89	11	115	132	153	173	201	222					
15	93	10	120	139	161	186	209	230					
20	98	111	127	147	169	191	217	236					
25	152	116	133	154	177	202	224	242					
30	107	122	141	163	188	211	231	248					

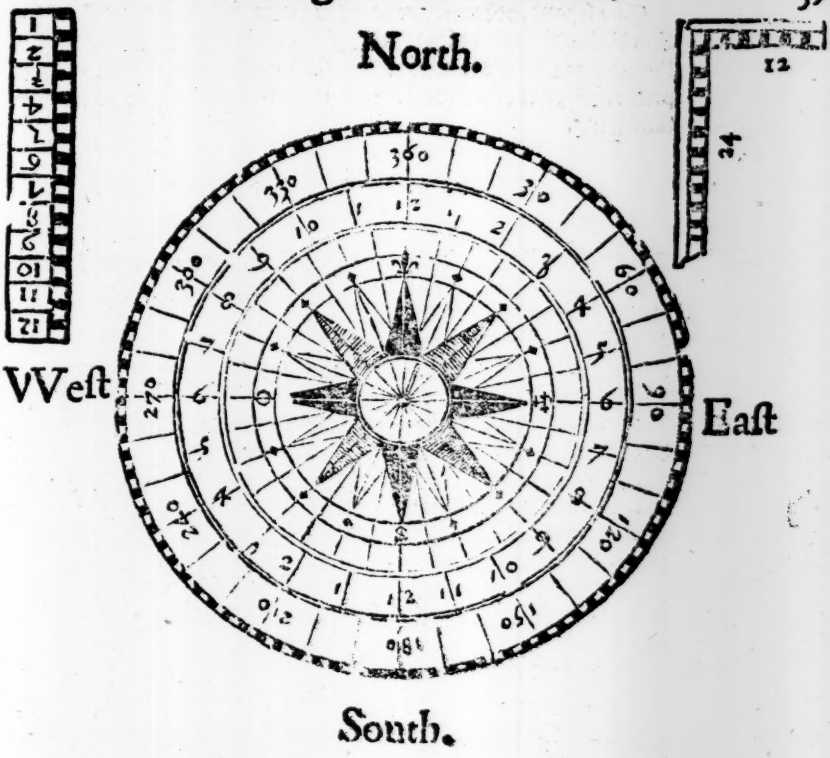
December hath xxxj. dayes.

From midnight unto day.

Oculus Tauri.	228	244	258	271	283	293	135						1
	234	259	263	275	286	122	144						5
	240	255	267	279	291	129	163						10
	246	260	272	284	265	138	153						15
	251	264	276	287	124	147	134						20
	256	263	280	291	132	155	184						25
Alrameth.	261	273	285	296	140	165	194						30
	1	2	3	4	5	6	7						

For the day.

		12	11	10	9					H		
2	*Staffe*	43	47	92	122					*ſhad.*	20	gr. ♐
	Squire	3	3	2	1					*ſhad.*		
12	*Staffe*	45	49	65	131					*ſhad.*	0	
	Squire	3	3	2	1					*ſhad.*		
22	*Staffe*	43	47	62	122					*ſhad.*	10	gr. ♑
	Squire	3	3	2	1					*ſhad.*		
31	*Staffe*	40	45	47	104					*ſhad.*	20	
	Squire	3	3	2	1					*ſhad.*		
		H	0	1	2	3						



Thus endeth the Peculiar Kalendar, very commodious for the day and night houre. I here adioyned the Instrument without the Square, which sumay serue for the whole vse of the foresayd Kalendar, with the helpe of the Squire and Staffe.

I May not here omit a Kalendar generall diuided into two parts, whereof the first containeth fiue moneths, from Ianuary to June:

The second, other fyre monethes, from July to December. In this Kalendar are set forth the Feastiuall dayes, the entring of the Sunne in the Signes celestiall, the euill dayes noted with one pricke. For a further declaration of those euill dayes: reade this following.

The yeare hath xxxiii. euill dayes generall for euer.

IAnuary hath eight such dayes: the first, the second, the fourth, the fift, the tenth, the fifteenth, the seuenteenth, the nineteenth. Drinke white wine in this moneth.

Februarie hath three daies. the viii. the x. the xvii. These not so euil, the xxvi. the xxvii. the xxviii. Eate no potage of Okes, or Mallowes: they are venomous.

March three daies: the xv. the xvi. the xix. this not so euill, xxviii day. This moneth all sweete meates are good.

Aprill two daies: the xvi. the xxi. These not so euill, the vii. the viii. the x. the xx. Use hote meates, of light digestion.

May three daies: the vii. xv. the xx. These not so euill, the iii. the vi. Rise early, and vse breakfast.

June two: the iiii. the vii. These not so euill, the x. the xv. the xvii. Sage and Lettise are good to eate. Colde water fasting hurteth not.

July two dayes: the xv. the xx. Abstaine from carnalitie.

August two dayes: the xix. the xx. These not so euill, the i. the xvix. the xxx. It hurteth not to abstaine from potage, and all hote meates, and drinkes of spicerie.

September two dayes: the vi. the vii. These not so euill, the iii. the iiii. the xxi. the xxii. Eate good fruite.

October one day: the vi. These not so euill, the iii. the xvi. the xviii. Good wine is wholesome this moneth.

November two dayes: the xv. the xix. These not so euill, the v. the vi. the xxviii. the xxix. Bleede not.

December three dayes: the vi. the vii. the ix. These dayes not so euill, the xv. the xvii. the xxii. Bleede not ouer much. Warme not thy legges at the fire.

Now

The firſt part of the generall Kalendar: from Ianuarie to Iune.

Ianuarie.	Februarie.	March.	Daies	April.	May.	Iune.
:A Circũci.	d	d	1	g	b Phi. Iac.	e
:b	e Purifi.	e	2	A	c	f
c	f	f	3	b	.d	g
:d	g	g	4	c	e	:A
:e	A	A	5	d	f	b
f Epiph.	b	b	6	e	.g	c
g	c	c	7	.f	:A	:d
A	:d	d	8	g	b	e
b	e ☉ in ♓	e	9	A	c	f
:c	:f	f	10	.b	d	.g
d ☉ in ♒	g	g ☉ in ♈	11	c ☉ in ♉	e	A Barna.
e	A	A Spring.	12	d	f ☉ in ♊	b ☉ in ♋
f Hilar.	b	b	13	e	g	c Sũmer.
g	c Valen.	c	14	f	A	d
A	d	:d	15	g	:b	.e
b	e	:e	16	:A	c	f
:c	:f	f	17	b	d	g
d	g	g	18	c	e	A
e	A	:A	19	d	f	b
f	b	b	20	.e	:g	c
g	c	c	21	:f	A	d
A	d	d	22	g	b	.e
b	e	e	23	A Georg.	c	f
c	f Math.	f	24	b	d	g Ioi bap.
d Cõ. Pau.	g	g Aſum.	25	c Marc.	e	A
e	A	A	26	d	f	b
f	.b	b	27	e	g	c
g	.c	.c	28	f	A	d
:A		d	29	g	b	e Pe. Pa.
b		e	30	A	c	f
c		f	31		d	

The generall Kalendar.

The seconde part of the generall Kalendar: from Iulie to December.

Iuly.	August.	Septemb.	Dayes	October.	Nouem.	Decem.
g	.c Pet. Vin.	f	1	A	d Om. ſa.	f
A	d	g	2	b	e Om. an.	g
b	e	.A	3	.c	f	A
c	f	.b	4	d	g	b
d	g	c	5	e	.A	c
e Dog beg.	A	:d	6	:f	.b	:d Nicol.
f	b	:e	7	g	c	:e
g	c	f Na. Ma.	8	A	d	f Cō. ma.
A	d	g	9	b	e	:g
b	e	A	10	c	f	A
c	f	b	11	d	g	b
d	g	c	12	e	A	c ☉ in ♑
e	A	d	13	f	b ☉ in ♐	dwynter.
f ☉ in ♌	b ☉ in ♍	e ☉ in ♎	14	g ☉ in ♏	c	e
:g	c	f Heruest.	15	A	:d	.f
A	d	g	16	b.	e	g
b	e Dog end	A	17	c	.f	.A
c	f	b	18	d Luc.	g	b
d	:g	c	19	e	:A	c
:e	:A	d	20	f	b	d
f	b	.e Mathe.	21	g	c	e Tho. ap.
g Ma. mag.	c	f	22	A	d	f
A	d	g	23	b	e	g
b	e Bar. Tho.	A	24	.c	f	A
c Luc. Apo.	f	b	25	d	g	b Na. do.
d	g	c	26	e	A	c Steph.
e	A	d	27	f	b	d Io. cuā.
f	b	e	28	g St. Iud.	.c	e Innoce.
g	.c decol. Io.	f Micha.	29	A	.d	f Tho.
A	.d	g	30	b	e Andre.	g
b	e		31	c		A

Lo the brieſe vſe of this generall Kalendar.

After the Columne where your Moneth is noted in the head, yee ſhall there finde running downe the columne the Feſtiual dates of that Moneth, the entrie of the Sunne in the celeſtiall ſignes, the euill dayes pricked, &c.

I would haue placed in this Kalendar the Fayres and Termes alſo: but that cannot remaine continually true. For thoſe that enſue moueable Feaſts are moueable, and therefore may haue no certaine place. For the Termes alſo, note theſe precepts following. The Fayres ſhall be declared by two Tables immediatly enſuing this Kalendar Generall.

How to know the Termes.

KNow that Eaſter Terme alwaies beginneth the 18. day after Eaſter, reckoning Eaſter day for one: and endeth the Monday next after the Aſcenſion day.

Trinitie Terme beginneth the Friday next after Corpus Chriſti day, and endeth the Wedneſday fourtnight after.

Michaelmaſſe Terme beginneth the 9. or 10. day of October: and endeth the 28. or 29. of Nouember.

Hilarie Terme beginneth the 23. or 24. day of Ianuarie: and endeth the 12. or 13. day of Februarie.

FINIS.

Generall Fayres.

A Table contayning the Moneth, day, and place of the principall Fayres of England, to be augmented at pleasure, in order following.

Ianuary. The first day of Ianuary, the faire is at Bristow, and also at Salisburie. The first of Lent at Exceter.

February. The second day at Bathe, at Maidstone. The 14. at Feuersame. On Ashwensday at Lichfield, at Royston, at Tamworth. The first Sunday in Lent, at Cicister, at Abington. The 24. at Henley vpon Thames, at Tewkesburie.

March. The 4. Sunday in Lent, at Stamforth, at Sudburie. The fift Sunday, at Grantam. The Monday before our Lady day, at Salisburie. Palme eeuen, at Wisbitch. The 13. at Wic. The 25. at Northamton, at great Chare, at Waulden.

Aprill. The 5. day at Wallingford. The 7. at Darby. The 9. at Bickelsworth, at Billingsworth. At Salam the Monday after. The Sunday after Easter, at Louth. The 23. at Charing, at Ipswich, at Antill, at Hinigam, at Gilford. The 25. at Darbie. The 26. at Tenterden.

May. The 1. day, at Stow the old, at Reading, at Maidstone, at Leicester, at Chensford. The 8. day at Beuerley. Ascension day, at Birmingham, at S. Edes, at Bishops Stafford. Whitsunday, at Kingstone vpon Thames. Trinitie Sunday, at Rowell. At Cranebroke the 19. day. The 27. day at Lenham.

Iune. On Corpus Christi day, at Couentrie, S. Edes, at Bishop Stanford, at Rosse. The 9. at Maidstone. The 11. at Okingam. The 23. at Shrowsbury, at S. Albones. The 24. at Cambridge, at Glocester, at Lincolne, at Wintsore, at Colchester. The 29. at Wollerhampton, at Peterborrow. The 17. at Folkstone. The 24. at Hartlam. The 8. at Petcorne.

A Table contayning the Moneth, day, and place of the principall Fayres of England: to bee augmented at pleasure, in order following.

The 11. day, Horse fayre at Partney, at Nabor, at Felix. The 12 day at Lid. The 15. at Pinchbacke. The 17. at Winchcome. The 20. at Arbridge, at Catesby. The 22. at Marleborow, at Winchester, at Colchester, at Tetburie. The 25. at Bissow, at Dower, at Chilham, at Ipswich, at Northampton, at Darbie, at S. Iames by London, at Reading, at Louth, at Malmsburie. July.

The 1. day at Feuersame, at Dunstable, at S. Edes, at Budforth, at Parram Church, at Wilbich. The 9. at Rumney. The 10. at Bedforth, at Fernam, at Strodes, at Blackamore, S. Lau, at Waltom. The 24. at London, at Tewkesburie, at Sudburie, at Norwich, at Northallerton, at Dower, at Rye. The 28. at ashford. August.

The 8. day at Cambridge, at Sturbridge, at London in Southwarke, at Smide, at Reculuer, at Partney three Lady dayes. The 14. at Waltam Abbey, at Wotton vnder hedge, at Spalding. The 21. at Croydon, at Holden in Holdernesse, at S. Edmondsburie, at S. Iues, at Haldy Lanam, at Wiltemall, at Sittingborow, at Dower, at Estry. The 29. day at Canterburie. September.

The 6. day, at S. Sithes besides Norwich. The 13. at Graues end, at Windsore, at Marchfield. The 18. at Ely, at Stanton, at Charing. The 23. at Harford, at Cicster, at Newmarket. October.

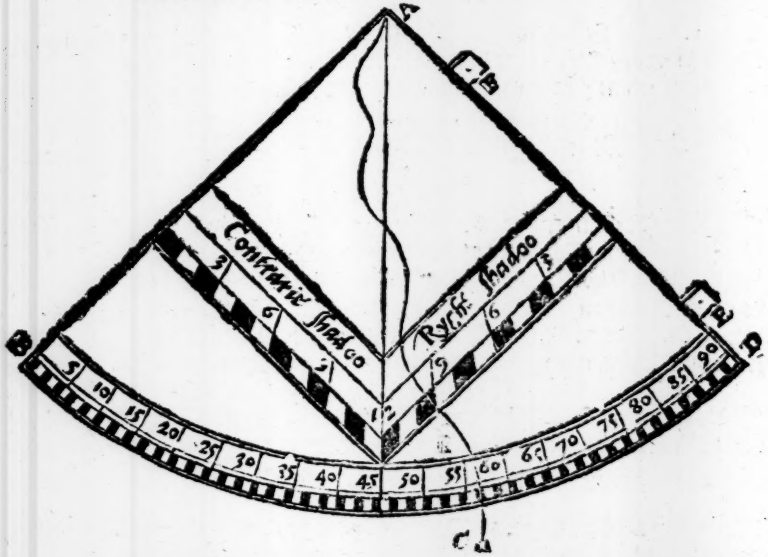
The 2. day at Kingstone, at Blechingly. The 6. at Newport Pond, at Stanly. The 11. at Dower. The 13. at S. Edmonsbury. The 20. at Hyth. The 23. at Sandwich. The 30. at Rochester, at Paydenhead. Nouember.

The 29. at Canterbury. The 5. at Pluckly The 6. at Spalding. The 7. at Sandhurst. December.

Because

BEcause I vnderstand many are desirous how to get exactly the iust length of Staffe and Squire shadowe before treated of, vpon vnlevell grounds, or otherwayes wheresoever it be, yea, without either Squire or Staffe: I haue calculated a Table following thoroughly satisfying thē, so that they get the height of the Sunne any way: or as I shall now instruct.

Behold this Instrument called a Quadrant the iust fourth part of a Circle, euen such a Circle as I taught you before to make for the right Diall: containing the fourth part of his diuisions, that is 90. degrees, only two sights and a plum line added, to be placed at the beginning of this booke, as ye may there, and here see. I haue here also put the Scale to the Quadrant, which serueth well for shadowes, and as well for heights. The vse of this Scale is declared in my booke called Tectonicon.



How by this Instrument to get the height of the Sunne at all times.

LIft vp handsomely your Quadrant, the Sunbeames perfing the sights. The Plummet and Line then at libertie falling, noteth there ỳ degrees of height at ỳ present, with the which ye shall enter this table immediatly following, to get then, and in like māner at all other times, the iust shadow of the Staffe or Squire.

A table

A Table generall of Shadowes, right and contrary, for euery grade of the Sunnes heyght: The thinge causing Shadowe, supposed 12 partes.

Heyght of the Sunne.		Staffe. Shadow.		Heyghte of the Sunne.		Staffe. Shadow.		Heyghte of the sunne.		Staffe. Shadowe	
G	g	P	M	G	G	P	M	G	g	P	M
0	90	Sha	m.	30	60	20	47	60	30	6	56
1	89	687	34	31	59	19	58	61	29	6	33
2	88	343	43	32	58	19	12	62	28	6	23
3	87	228	59	33	57	18	29	63	27	6	7
4	86	171	37	34	56	17	47	64	26	5	51
5	85	137	10	35	55	17	8	65	25	5	6
6	84	114	10	36	54	16	30	66	24	5	21
7	83	97	49	37	53	15	52	67	23	5	6
8	82	85	28	38	52	15	21	68	22	4	51
9	81	75	46	39	51	14	49	69	21	4	36
10	80	68	3	40	50	14	18	70	20	4	22
11	79	61	44	41	49	13	48	71	19	4	8
12	78	56	27	42	48	13	20	72	18	3	54
13	77	51	59	43	47	12	52	73	17	3	40
14	76	48	8	44	46	12	26	74	16	3	26
15	75	44	47	45	45	12	0	75	15	3	13
16	74	41	51	46	44	11	35	76	14	3	0
17	73	39	15	47	43	11	11	77	13	2	46
18	72	36	54	48	42	10	48	78	12	2	32
19	71	34	51	49	41	10	26	79	11	2	20
20	70	32	58	50	40	10	4	80	10	2	7
21	69	31	16	51	39	9	43	81	9	1	54
22	68	29	42	52	38	9	22	82	8	1	41
23	67	28	16	53	37	9	3	83	7	1	29
24	66	26	57	54	36	8	43	84	6	1	16
25	65	25	44	55	35	8	24	85	5	1	3
26	64	24	37	56	34	8	6	86	4	0	50
27	63	23	33	57	33	7	48	87	3	0	38
28	62	22	34	58	32	7	30	88	2	0	25
29	61	21	40	59	31	7	13	89	1	0	12
30	60	20	47	60	30	6	56	90	0	0	0
Heyght of the Sunne		Squire Shadow.		Heyht of the Sun.		Squier. Shadow.		Heyght of the Sunne		Squyre. Shadow	

The vse of this Table, and first for staffe shadow.

Example.

I Suppose the height of the Sunne, taken by the Quadrant, 34. degrees: Now I require the exact length of Staffe and Squire shadow. For right shadow, first seeke out the degrées in the left part of the Table, and vnder this title the height of the Sunne: if they be not in that left row downewards, resort to the next rowe and like title, vntill ye finde the degrees: then in right order toward the right hand, in the next Columne vnder the title of Staffe shadow, are 17. parts, and 47. minutes, your desire.

For Squire shadow, titled contrarie Shadow.

SEeke your degrees in the right part vpwarde, at this title Height of the Sunne, in the bottome of this Table: then shall ye finde on the right hand of 34. degrees, in the next colume, eight parts and sixe minutes: that is the very length of Squire shadow when the Sunne is 34. degrees in height.

OCcasioned I cannot here omit another Table faithfully supputated for the Sunnes altitude, by the which with quicke speede the houre is knowne. This Table conduceth manifolde wayes, yea, to the composition of diuers and many Instruments: as Quadrants, Nauicles, Cylindres, Rings, &c.

Behold now it doth ensue, and also the briefe vse of it.

A Table

A Table of the Sunnes altitude, for euery houre: the Pole mounted. 51. degrees 30. Minutes, exactely calculated.

Houres before n. / Houres after n.				12		11 / 1		10 / 2		9 / 3		8 / 4		7 / 5		6 / 6		5 / 7		4 / 8	
Si.	G	S	G	G	M	g	M	g	M	g	M	g	M	g	M	g	M	g	M	g	M
	30	♋	0	62	0	59	43:	53	45	45	42:	36	42:	27	23:	18	11	9	28:	1	31.
	25		5	61	54:																
	20		10	61	37:	59	21.	53	26:	45	24.	36	25	27	6	17	54.	9	9.	13	:
	15		15	61	9:																
	10		20	60	30:	58	17.	52	28.	44	32	35	35	26	16.	17	3	8	16.	0	16
	5		25	61	41:																
♊	0	♌	0	58	42:	56	34.	50	55:	43	6.	34	13.	24	56:	15	41:	6	50.	0	0
	25		5	557	34.																
	20		10	53	17:	54.	15	48	48:	41	10.	32	22.	23	6.	13	50	4	55:	0	0
	15		15	4	52:																
	10		20	53	21:	51	26:	46	12:	38	46:	30	6.	20	52.	11	34.	2	34.	0	
	5		25	51	43:																
♉	0	♍	9	0	0	48	11.	43	11.	35	53	27	2[illegible].	18	1[illegible].	8	59:	0	0		
	25		5	48	12:																
	20		10	46	20:	44	37.	39	51	32	53:	24	32.	15	27.	6.	8:	0	0		
	15		1	44	25:																
	10		20	42	23:	40	51:	35	18	29	34:	21	24:	12	25:	3	6.	0	:		
	5		25	40	20:																
♈	0	♎	0	33	30:	36	58	32	37.	26	7:	18	8.	9	16.	0	0				
	25		5	36	30																
	20		10	34	32.	33	4	28	55:	22	33:	14	51:	6	7	0	0				
	15		5	32	35.																
	10		20	30	40.	29	16.	25	18	19	14:	11	33	3	2:	0					
	5		25	28	4[illegible]																
♓	0	♏	0	27	0	25	40	21	51:	15	50:	8	34.	6	0.						
	25		5	25	17.																
	20		10	23	39	22	22.	18	42:	13	1:	5	45:	0	0						
	15		15	22	8.																
	10		20	20	43.	19	29	15	55.	10	23:	3	17	0							
	5		25	19	26:									0							
♒	0	♐	0	18	18.	17	6	13	38:	3	3:	1	15.								
	25		5	17.	19.																
	20		10	15	30.	14	48:	11	55.	6	35:	0	0								
	15		15	15	51.																
	10		20	15	23.	14	13:	10	52:	5	3[illegible].	0									
	5		25	15	6																

VVhen the Sunne eaireth the 22 grade of ♋, he toucheth our Hor 4. in the morninge. Entring the 22 of ♑ he ryseth at 8 in the fyrst at 5. in the first of ♍, at 7. Note in all my tables, one pi following the Minutes, diminisheth: two, augmenteth some smale quantitye.

The brieſe vſe of this Table.

SUppoſe the height of the Sunne taken by the Quadrant, eight degrees and 13. minutes, the Sunne being in the beginning of Aquarie, or Sagittarie, I ſeek, and find in this table and in the row which directly anſwereth ♒ and ♐ eight degrées and 13. minutes: that is agreeable to 9. or 3. of the clocke in the head of this Table. Therefore I pronounce, that when the Sun was 8. degrees and 13. minutes in height, entring ♒ or ♐, it was preciſe nine of the clocke in the morning or three at after noone.

Thus at all times ye may know the iuſt houre.

Ye may alſo conclude the height of the Sunne at all times, the place of the Sunne knowne, and the houre. Note, when the preciſe numbers either of height, or degree of the Sunne are not found in the Table, then make proportion according to the difference, &c. Practiſe, better than many words, openeth this. Now to end this matter: this following to him that hath taſted theſe knowledges, I write.

Dato loco Solis & eius altitudine, horam ipſam calculare.

DVc ſinum inuentæ ſolaris altitudinis, in ſinum arcus ſemidiurni, & productum diuide per ſinum altitudinis meridianæ eiuſdem Solis, & prouenientis inde partium numeri ſumito arcum, quem tandem in horas vertas. Collectus horarum numerus quæſitam indicabit horam: ab ortu quidem Solis, ſi altitudo fuerit antemeridiana, vel ab occaſu, ſi eadem Solis altitudo acciderit poſt meridiem.

NOw hauing ſome occaſion, I could here adioyne a briefe Supputation Sinicall, touching moſt workings Aſtronomicall, but how farre that paſſeth the capacitie of the common ſort of men, they that bee trauailed knowe. For this cauſe I leaue to giue any precepts this way: deſiring prouocation meete to haue to doe in the like: then God ſuffering, my penne ſhall not ſtay to

open

open readie chosen generall waies, for pleasant Astronomicall operation.

HEre shall now followe briefly collected certaine rules, performed before by Tables: but now done by quicke supputation, to bee had in memorie by that, auoyding carryage or burthen of bookes.

A way to get the Golden number or Prime without a table.

ADde vnto the yeere of our Lord 1. then diuide that summe by 19. the remaine is the Prime or Golden number.

The Epact is thus euer found.

MVltiplie the Prime by 11. diuide by 30. the remaine is your desire. These two numbers begin at March, their vse is chiefly to finde out the change, quarters and full Moone, as ensueth.

A rule for the Chaunge, Full, and Quarters of the Moone.

PVt vnto the Epact all the moneths from March, including the moneth of March: pull then that summe from 30. the remaine sheweth the day of the change.

Here note the full Mone is the 15. day after the chaunge. Also if the remaine be lesse then 15. subtract that lesse from 15. the rest is the full Moone.

If the remaine passe 30. subtract it from 45. then the full doth also appeare.

To conclude, if from the full Moone yee pull 15. dayes, ye haue the chaunge going before. The chaunge had, the quarters are knowne, by adding or pulling away seuen dayes.

For the age of the Moone, worke thus for euer.

ADde to the dayes of your Moneth the Epact, and also as many dates more as are moneths from March to your moneth, including both moneths. Now subtract thirtie, if ye may, the age then remaineth.

Now shall be declared what Signes and degrees the Moone differeth from the Sunne, by the which is gathered at all times, the Signe and Grade wherein she is.

MUltiplie the age of the Moone by 4. diuide by 10. the quotient sheweth the Signes that the Moone differeth from the Sunne. The remaine augmented by 3. bringeth degrees to be added. Ye must put these Signes and degrees to the place of the Sunne. The product, I meane the increase or ende of all these Signes and degrees in order counted from the Sunne, declare the place of the Moone in the Zodiacke.

The place of the Sunne in the Zodiacke is thus found.

FIrst know that the 11. day of January, the Sunne is entred into ♒. The 10. day of Februarie ♓. The 11. of March ♈. The 11. of Aprill ♉. The 12. of May ♊. The 12. of June ♋. The 14. of July ♌. The 14 of August ♍. The. 14. of September ♎. The 14. of October ♏. The 13. of Nouember ♐. The 12. of December ♑.

This knowne, the place of the Sunne is well found, adding for euery day past any entrey, 1. degree.

Ex-

Example.

I Require the place of the Sunne the 21. day of August. I finde that the Sun is entered in ♍ the 14. day of the moneth. I must for euery day past any entry adde 1. degree. There are seuen daies past that entrie, then I conclude the Sunne readie to haue place in the 8. degree of ♍ the 21. of August.

To know how long the Moone shineth.

FOr her shining in the encrease, multiplie the age of the Moone by 4. In the wane augment the rest of the age which she lacketh of 30. by 4. and diuide by 5. The Quotient sheweth the houres: the remaines if there be any, multiplied by 12. bringeth minutes to be added.

How the moueable feasts are found readily.

SEeke the change of the Moone in February, for that yeere yée require these moueable Feasts. Note what day it falleth on, the next Tuesday is Shrouetuesday. But if the change be on Tuesday, the next Tuesday ensuing is it. The next Sunday is the first Sunday of Lent. Sixe Sundayes after is Easter day. Adde 35. dayes, or 5. weekes to Easter day, ye haue Rogation Sunday. To that adde 4. dayes, so ye haue Ascension day. Then haue ye 10. daies to Whitsunday. Seuen dayes after is Trinitie Sunday. And foure dayes after is Corpus Christi day.

Without Tables, at all times to know the Tydes.

LEarne as is declared the age of the Moone: also remember the houre of the Full or Change, for your place or poynt which doth neuer varie: these knowne, worke thus.

Ex-

Example.

When the Moone is tenne daies olde, I desire to knowe at what of the clocke it is full sea at London bridge. Multiplie tenne by fortie eight, so haue ye foure hundred eightie: diuide that by sixtie, ye haue eight houres. To that adde three, which is the houre of the full or change appointed for that place. All then commeth vnto eleuen of the clocke high water at London bridge. If any thing remaine they are minutes of an houre. If the houres amount aboue twelue, cast the twelues away, the rest is your request.

FINIS.

TO THE READER.

HAuing of late (gentle Reader) corrected and reformed ſundrie faults, that by negligence in printing haue crept into my Fathers *Generall Prognoſtication:* Among other things I haue found a deſcription or Modill of the world, and ſituation of Spheres Cœleſtiall & elementarie according to the doctrine of *Ptolomie*, whereunto all Vniuerſities (led thereunto chiefely by the authoritie of (*Ariſtotle*) ſithens haue conſented. But in this our age, one rare wit (ſeeing the continuall errors that from time to time more and more haue been diſcouered, beſides the infinite abſurdities in their Theoricks, which they haue been forced to admit that would not confeſſe any Mobilitie in the ball of the earth) hath by long ſtudy, painefull practiſe, and rare inuention deliuered a new Theoricke or Modill of the world, ſhewing that ỹ earth reſteth not in the Centre of the whole world, but ~~not~~ onely in the Centre of this our mortall world or Globe of Elements, which enuironed and encloſed in the Moones Orbe, and together with the whole Globe of mortalitie is caried yeerely round about the Sunne, which like a king in the middeſt of al raigneth and giueth lawes of motion to the reſt, ſphærically diſperſing his glorious beames of light through all this ſacred Cœleſtial Temple. And the Earth it ſelf to be one of the Planets, hauing his peculiar and ſtrange courſes turning euery 24 houres round vpon his owne Centre: whereby the Sun and great Globe of fixed ſtarres ſeeme to ſway about and turne, albeit indeede they remaine fixed. So many waies is the ſenſe of mortall men abuſed. But reaſon & deep diſcourſe of wit hauing opened theſe things to *Copernicus*, and the ſame being with demonſtrations Mathematical, moſt appa-

rantly by him to the world deliuered: I thought it conuenient together with the old Theorick alſo to publiſh this, to the end ſuch noble Engliſh mindes (as delight to reach aboue the baſer ſorte of men) might not be altogether defrauded of ſo noble a part of Philoſophie. And to the ende it might manifeſtly appeare, that *Copernicus* meant not (as ſome haue fondly excuſed him) to deliuer theſe grounds of the earths mobilitie, onely as Mathematical principles fayned, and not as Philoſophicall truly auerred: I haue alſo from him deliuered both the Philoſophical reaſons by *Ariſtotle* and others, produced to maintaine the Earths ſtabilitie, & alſo their ſolutions and inſufficiencie, wherein I cannot a little commend the modeſtie of ỹ graue Philoſopher *Ariſtotle*, who ſeeing (no doubt) the ſufficiencie of his own reaſons in ſeeking to confute the earths motion, vſeth theſe words: *De his explicatum eſt, ea, qua potuimus facultate:* howbeit his diſciples haue not with like ſobrietie maintained the ſame. Thus much for my owne part in this caſe I will only ſay. There is no doubt, but of a true ground, truer effects may be produced, then of principles that are falſe: and of true principles, falſehood or abſurdities cannot be inferred.

If therfore the Earth be ſituate immoueable in the Centre of the world, why find we not Theoricks vpon that ground to produce effects as true and certaine as thoſe of *Copernicus?* Why caſt we not away thoſe *Circles Æquãtes* and motions irregular? ſeeing our own Philoſopher *Ariſtotle* himſelfe the light of our Vniuerſities hath taught vs: *Simplicis corporis ſimplicem oportet eſſe motum.* But if contrarie, it be found impoſſible (the Earths ſtabilitie being graunted) but that we muſt neceſſarily fall into theſe abſurdities, and cannot by any meane auoyd thẽ: why ſhall wee ſo much dote in the apparance of our ſences, which many waies may be abuſed, and not ſuffer our ſelues to be directed by the rule of Reaſon, which the great God hath giuen vs as a lampe to lighten the darknes of our vnderſtanding, and the perfect guide to leade vs to the golden branch of Veritie amidde the Forreſt of errors.

Behold a noble Queſtion to be of the Philoſophers & Mathematicians of our Vniuerſities, argued not with childiſh inuentions, but with graue reaſons Philoſophical, and irreproueable Demonſtrati-

ons

ons Mathematical. And let vs not in matters of reaſon be led away with authority and opinions of men, but with the Stellified Poet let vs ſay:

Non quid Ariſtoteles vel quinis dicat eorum:
Dicta nihil moror, à vero cum fortè recedunt.
Magni ſæpè viri mendacia magna loquuntur.
Nec quiſquam eſt adeo ſagax, quin ſæpius erret.

Ratio dux fida Sophorum.

THe Globe of Elements encloſed in the Orbe of the Moone, I call the Globe of Mortality, becauſe it is the peculiar Empire of death. For aboue the Moone they feare not his force: but as the Chriſtian Poet ſayth,

Omne quod eſt ſupra lunam, æternumque bonumque.
Eſſe ſcias: nec triſte aliquid Cœleſtia tangit.
Quicquid verò infra lunæ connexa creauit
Omniparens, natura malum eſt, mortiſq; ſeueras
Perpetitur leges & edaci abſumitur æuo.

Againe.

Omne malum eſt infra lunam, nox atra, procellæ
Terribiles, frigus, calor, importuna ſenectus,
Pauperies maleſuada, labor, dolor, improbitas, Mors.
Supra autem lunam, lucis ſunt omnia plena,
Nec non lætitiæ & pacis, non tempus & error,
Et MORS, & ſenium eſt illic, & inutile quicquam.
Fœlix ô nimium Fœlix, cui ſedibus illis.
Tam pulchris & tam incundis tamque beatis
Viuere conceſſum eſt, ſupremi munere Regis.

And againe.

Singula nonnulli credunt quoque ſydera poſſe
Dici Orbes, Terramq; appellant ſydus opacum,
Cui minimus Dinum præſit, &c.

To The Reader.

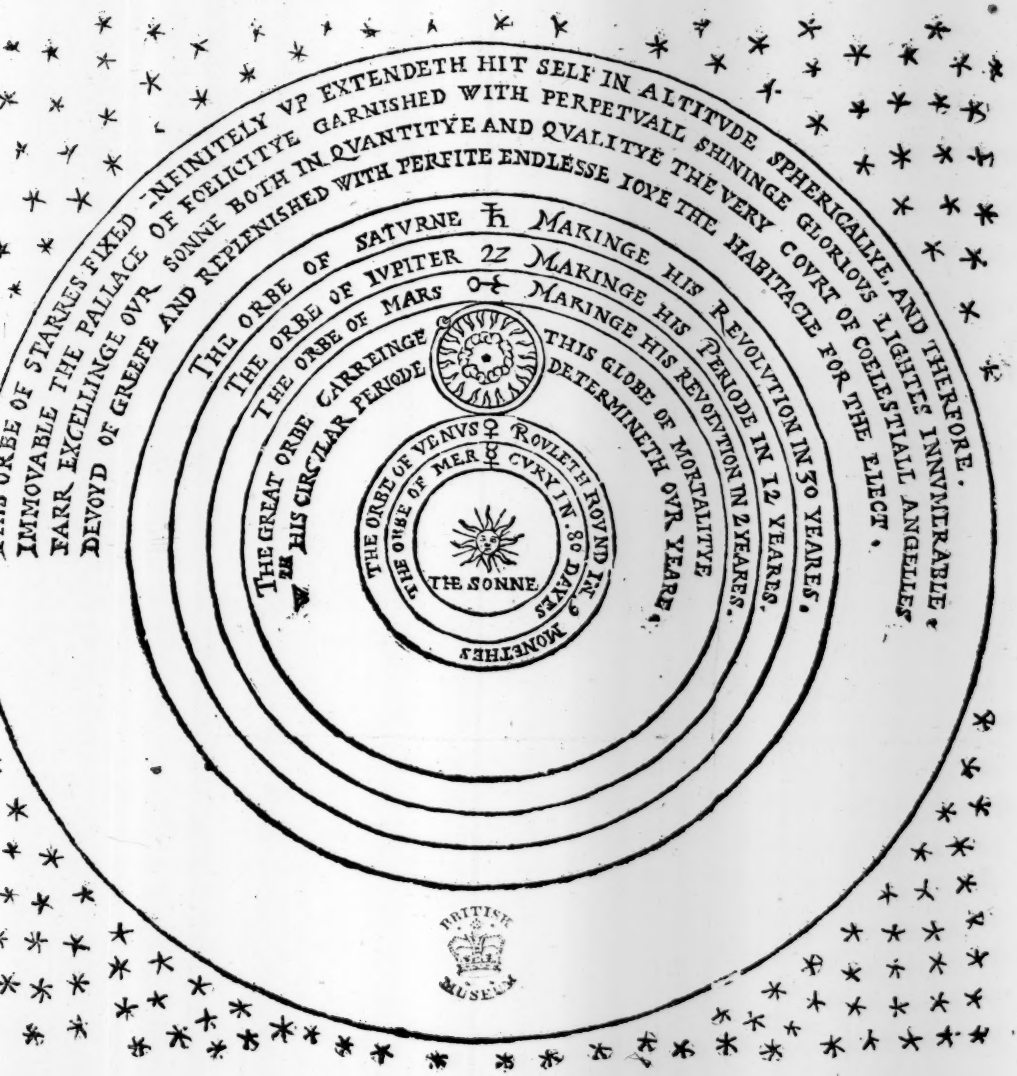
In the middeſt of this Globe of Mortality hangeth this dark ſtar or ball of the earth and water, balanced and ſuſtayned in the middeſt of the thinne ayre onely with what proprietie which the wonderfull workeman hath giuen at the Creation to the Center of this Globe, with his magnetical force vehemently to draw and hale vnto it ſelfe all ſuch other Elementall things as retayne the like nature. This ball euerie 24. houres by naturall vniforme, and wonderfull ſlie & ſmooth motion rolleth round, making with his Period our natural day, whereby it ſeemes to vs that the huge infinite immoueable Globe ſhould ſway and turne about.

The Moone Orbe that enuironeth and contayneth this darke ſtar, and the other mortall, changeable, corruptible Elements and Elementary things, is alſo turned round euery 20. daies. 31. Minutes. 50. ſeconds. 8. thirds, 9. fourths, and 20. fifte: and this Period may moſt aptly be called the month. The reſt of the Planets motions appeare by the Picture, and ſhall more largely be hereafter ſpoken of.

Herein good Reader, I haue waded farther then the vulgar ſorte, *Demonſtratiuè & Practicè*, and God ſparing life I meane, though not as Iudge to decide, yet at the Mathematical barre in this caſe to plead, in ſuch ſorte, as it ſhall manifeſtly appeare to the world, whether it bee poſſible vpon the Earths ſtabilitie to deliuer any true or probable Theorick, and then referre the pronouncing of ſentence to the graue Senate of indifferent diſcreete Mathematicall Readers.

Farewell, and reſpect my trauailes as thou ſhalt ſee them tende to the aduancement of truth, and diſcouering the monſtrous loathſom ſhape of error.

A perfit description of the Cœlestiall Orbes, according to the most auncient doctrine of the Pythagoreans, &c.



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A PERFIT DESCRIPTION OF THE COELESTIALL ORBES,

according to the most ancient doctrine of the Pythagoreans: lately reuiued by *Copernicus*, and by Geometriall Demonstrations approued.

ALthough in this most excellent and difficile part of Philosophie in all times haue bẽn sundrie opinions touching the situation and moving of the bodies celestiall, yet in certaine principles, all Philosophers of any account of all ages haue agreed & consented. First that the Orbe of the fixed stars is of all other the most high, the farthest distant, & comprehendeth the other Spheres of wandring starres. And of these straying bodies called Planets, the old Philosophers thought it a good ground in reason, that the nighest to the Centre should swiftliest mone, because the circle was least and therby the soner ouerpassed, and the further distant, the more slowly. Therefore as the Mone being swiftest in course, is found also by measure nighest, so haue all agreed that the Orbe of ♄ being in moving the slowest of all the Planets, is also the highest: ♃ the next, and then ♂: but of ♂ and ♀ there hath bin great controuersie, because they stray not euery way from the Sunne, as the rest doe. And therfore some haue placed them aboue the Sun, as Plato in his Timæo: others beneath, as Ptolomie, and the greater part of them that followed him. Alpetragius maketh ♂ aboue the Sunne, and ♀ beneath, and sundrie reasons haue bẽn of all sides alleaged in defence of their opinions. They that follow Plato (supposing that all starres should haue obscure and darke bodies shining with borrowed light like the Mone) haue alleaged that if those Planets were lower than the Sunne, then should they sometime obscure some part of the bodie of the Sunne, and also

shine, not with a light circular, but segmentarie, and that variable as the Mone: which when they see by experience at one time to happen, they conclude with Plato. On the contrarie part, such as will maintaine them beneath, frame a likelihood by reason of the large space betweene the Orbes of the ☉ and ☽. For the greatest distance of the ☽ is but 64. semidiameters of the earth: and to the nighest of the Sunne are 1160. so that there remaineth betweene the ☽ and the ☉ 1905. semidiameters of the earth. And therefore that so huge a space should not remaine emptie, there they situate the Orbes of ♀ and Venus. And by the distance of their Absides, whereby they search the thicknes of their Orbes, they finde that they of all the rest best answere that situation, so as the lowest of ♀ Orbe may reach downe almost to the highest of the Mones, and the top of ♀ to the inferiour part of ♂ Sphere, which with his Absis should reach almost vnto the Sunne. For betweene the Absides of ♀ by their Theoricks, they supputate 177. semidiameters of the earth, and thē the crassitude of Venus Orbe, being 910 semidiameters both very nigh supplie and fill the residue. They therefore will not confesse that these Planets haue any obscuritie in their bodies like the ☽, but that either with their owne proper light, or else being throughly pierced with solare beames, they shine and shew circulare. And hauing a straying course of latitude, they seldome passe betweene the Sunne and vs: or if they should, their bodies being so small could scarcely hide the hundred part of the Sun, and so small a spot in so noble a light could hardly be discerned. And yet Auerrois in his Paraphrasis on Ptolomie affirmeth, that he saw a little spot in the Sunne at such time as by Calculation he had forecast a corporal Coniunction. But how weake this their reason is, it may soone appeare if we consider how from the earth to the lowest of the Mones Orbe there is 38. semidiameters of the earth, or by the truer computation according to Copernicus 52. And yet in all that so huge a space we know nothing but the ayre or firie Orbe, if any such be. Againe, the diameter of the circle whereby Venus should be carried nigh 45. grades distant from the Sun, must nēdes be fire times greater at the least, than the distance of that circles lowest part from the earth: than if that whole circle comprehended within the Orbe of Venus should be

turned

turned about the earth, as néedes it muſt, if we will not attribute to the earth any motion, we may eaſily conſider what rule in the Heauens ſo balke and huge an Epicicle, containing a ſpace ſo many times greater than the earth, Aire, and Orbs of the Mone and ☿ alſo, wil make: eſpecially being turned round about the earth. Againe, the reaſon of Ptolomie, that the ☉ muſt néedes be placed in the middeſt of thoſe Planets that wander from him at libertie, and thoſe that are as it were combined to him, is proued ſenſeleſſe by the motion of the Mone, whom wee ſee no leſſe to ſtray from the Sun, than any of thoſe other three ſuperiour Planets. But if they will néedes haue theſe two Planets Orbes within an Orbe of the Sunne, what reaſon can they giue why they ſhould not depart from the Sunne at large, as the other Planets doe, conſidering the increaſe of ſwiftnes in their motion muſt accompanie the inferiour ſituation, or elſe the whole order of Theoricks ſhould be diſturbed? It is therefore euident, that either there muſt be ſome other Centre, whereunto the order of theſe Orbes ſhould be referred, or elſe no reaſon in their order, nor cauſe apparant, why we ſhould rather to ♄ than to ♃ or any of the reſt attribute the higher or remoter Orbe. And therefore ſéemeth it worthie of conſideration that Martianus Capella wrote in his Encyclopedia, and certaine other Latines held, affirming that ♂ and ☿ do run about the Sunne in their ſpheres peculiar, and therefore could not ſtray further from the ☉ than the capacitie of their Orbes would giue them leaue, becauſe they encompaſſe not the earth as the others doe, but haue their Abſides after another maner conuerſed. What other thing would they hereby ſignifie, but that the Orbs of theſe Planets ſhould enuiron the Sunne as their Centre. So may the Sphere of ☿ being not of halfe the amplitude of Venus Orbe, bée well ſituate within the ſame. And if in like ſort wee ſituate the Orbes of ♄, ♃ and ♂, referring them as it were to the ſame Centre ſo, as their capacitie be ſuch as they containe and circulate alſo the earth, happily wee ſhall not erre, as by euident Demonſtrations in the reſidue of Copernicus Reuolutions is demonſtrate. For it is apparant that theſe Planets nigh the Sunne, are alwaies leaſt, and further diſtant, and oppoſite, and much greater in ſight, and nigher to vs: whereby it cannot be, but the Centre

of

of them is rather to the ☉, than to the earth to be referred: as in the Orbes of ♂ and ♀ also. But if all these to the Sunne as to a Centre in this manner be referred, thē must there nēds betwēn the conuexe Orbe of ♂ and the concaue of ♂ an huge space be left, wherein the earth and Elementarie frame, inclosed with the Lunarie Orbe, of dutie must be situate. For, frō the earth the Mone may not be farre remoued, being without controuersie of al other nighest in place and nature to it: especially considering betwēne the same Orbes of ♂ and ♂ there is rome sufficient. Therefor nēde we not to be ashamed to confesse, this whole globe of Elements enclosed with the Mones sphere, together with the earth as the Centre of the same, to be by this great Orbe, together with the other Planets about the Sunne turned, making by his reuolution our yēre. And whatsoeuer seeme to vs to procēde by the mouing of the Sunne, the same to procēde indeede by the reuolution of the earth, the Sunne still remaining fixed and immoueable in the middest. And the distance of the earth from the Sunne to be such, as being compared with the other Planets, maketh euident alterations, and diuersitie of aspects: but if it be referred to the Orbe of starres fixed, then hath it no proportion sensible, but as a point or a Centre to a circumference, which I hold far more reasonable to be granted, than to fall into such an infinite multitude of absurd imaginations, as they were faine to admit that wil nēdes wilfully maintaine the earths stabilitie is the Centre of the world. But rather herein to direct our selues by that wisedome, we see in all Gods naturall workes, where we may behold one thing rather endued with many vertues and effects, than any superfluous or vnnecessarie part admitted. And all these things, although they seeme hard, strange, and incredible, yet to any reasonable man that hath his vnderstanding ripened with Mathematicall demonstration, Copernicus in his Reuolutions according to his promise, hath made them more euident and cleere than the Sunne beames. These grounds therefore admitted, which no man reasonably can repugne, that the greater Orbe requireth the longer time to runne his period: the orderly and most beautifull frame of the heauens doth ensue. The first and highest of all is the immoueable sphere of fixed starres, containing it selfe and all the

rest,

reſt, and therefore fixed: as the place vniuerſall of reſt, whereunto the motions and poſitions of al inferiour ſpheres are to be compared. For albeit ſundrie Aſtrologians finding alterations in the declination and longitude of ſtarres, haue thought that the ſame alſo ſhould haue his motion peculiar: yet Copernicus by the motions of the earth ſaueth al, and vtterly cutteth off the ninth and tenth ſpheres, which contrarie to all ſenſe the maintainers of the earths ſtabilitie haue bẽn compelled to imagine.

The firſt of the moueable Orbes is that of ☿, which being of all other next vnto the infinite Orbe immoueable, garniſhed with lights innumerable, is alſo in his courſe moſt ſlow, and once only in thirtie yéeres palleth his period.

The ſecond is ♃, who in twelue yéeres perfoꝛmeth his circuit.

Mars in two yéeres runneth his circular race.

Then followeth the great Orbe, wherein the Globe of moꝛtalitie incloſed in the Mones Orbe as an Epicicle, and holding the earth as a Centre by his owne waight reſting alway permanent in the middeſt of the aire, is carried round once in a yéere.

In the fift place is Venus, making her reuolutiõ in 9. moneths.

In the firſt is ☉, who palleth his circuit in 80. dales.

In the middeſt of all is the Sunne.

For in ſo ſtately a Temple as this, who would deſire to ſet his lampe in any other better oꝛ moꝛe conuenient place than this, from whence vniforꝛmely it might diſtribute light to all: foꝛ not vnfitly it is of ſome called the Lampe oꝛ light of the woꝛld, of others the minde, of others the Ruler of the woꝛld.

Ad cuius numeros & dii moueantur, & Orbes
Accipiant leges, præſcriptáque fœdera ſeruent.

Trismegistus calleth him the visible God. Thus doth the Sun like a King sitting in his throne, gouerne his Courts of inferiour powers: neither is the Earth defrauded of the seruice of the Moone: but Aristotle saith, of all other the Moone with the Earth hath nighest alliance, so heere they are matched accordingly.

In this forme or frame may we behold such a wonderfull Symmetry of motions and situations, as in no other can be proponed. The times whereby wee the inhabitants of the Earth are directed, are constituted by the reuolutions of the Earth: the circulation of her Centre causeth the yeere, the conuersion of her circumference maketh the naturall day, and the reuolution of the ☽ produceth the moneth. By the onely view of this Theorick, the cause and reason is apparant, why in ♃ the progressions and Retrogradations are greater than in ♄, and lesse than in ♂, why also in Venus they are more than in ☿: and why such changes from direct to retrograde Stationarie, &c. happeneth, notwithstanding more risely in ♄ than in ♃, and yet more rarely in ♂: why in Venus not so commonly as in ☿. Also why ♃ and ♂ are nigher the earth in their Acronicall, than in their Cosmicall or Heliacall rising: especially ♂, who rising at the Sunne set, sheweth in his ruddie fierie colour equall in quantitie with ♃, and contrariwise setting little after the Sunne, is scarcely to be discerned from a starre of the second light. All which alterations apparantly follow vpon the Earths motion. And that none of these doe happen in the fixed starres, it plainly argueth this huge distance and immeasurable altitude, in respect whereof this great Orbe, wherein the Earth is carried, is but a point, and vtterly without sensible proportion, being compared to that Heauen. For as it is in perspectiue demonstrate: euery quantitie hath a certaine proportionable distance whereunto it may be discerned, and beyond the same it may not be seene. This distance therefore of the immoueable Heauen is so exceeding great, that the whole Orbis magnus vanisheth away, if it be conferred to that Heauen.

Herein can wee neuer sufficiently admire this wonderfull and incomprehensible huge frame of Gods worke proponed to our senses, seeing first this ball of the Earth wherein wee moue, to the

common

common sort seemeth great, and that in respect of the Moones Orbe is very small, but compared with Orbis magnus wherein it is carried, it scarcely retaineth any sensible proportion: so marvellously is that Orbe of annuall motion greater than this little darke Starre wherein wée liue. But that Orbis magnus, being (as is before declared) but as a poynt in respect of the immensitie of the immoueable Heauen, we may easily consider what little portion of Gods frame our Elementare corruptible world is, but never sufficiently be able to admire the immensitie of the rest: especially of that fired Orbe garnished with lights innumerable, and reaching vp in Sphericall Altitude without ende. Of which lights Celestiall it is to be thought, that we onely behold such as are in the inferiour parts of the same Orbe: & as they are higher, so seeme they of lesse and lesser quantitie, euen till our sight, being not able further to reach or conceiue the greatest part of the rest, by reason of their wonderfull distance inuisible vnto vs. And this may well bee thought of vs to bée the glorious Court of the great God, whose vnsearchable works inuisible we may partly by these his visible, coniecture: to whose infinite power and Maiestie, such an infinite place surmounting all other both in quantitie and qualitie only is conuenient. But because the world hath so long a time beene carried with an opinion of the Earths stabilitie, as the contrarie cannot but be now very imperswasible, I haue thought good out of Copernicus also, to giue a taste of Reasons Philosophicall alleaged for the Earths stabilitie, and their solutions: that such as are not able with Geometricall eyes to beholde the secret perfection of Copernicus Theorick, may yet by these familiar and natural reasons be induced to search farther, and not rashly to condemne for phantasticall, so ancient doctrine reuiued, and by Copernicus so demonstratiuely approued.

What reasons moued Aristotle, and others that followed him, to thinke the earth to rest immoueable as a Centre to the whole world.

THe most effectuall reasons that they produce to proone the Earths stabilitie in the middle or lowest part of the world,

is that of Grauitie and Leuitie. For of all other the Element of the earth (say they) is most heauie, and all ponderous things are carried vnto it, striuing (as it were) to sway euen downe to the vtmost part thereof. For the earth being round, into the which all waightie things on euery side fall, making right angles on the superficies, passe to the Centre, seeing euery right line that falleth perpendicularly vpon the Horizon in that place where it toucheth the earth, must needes passe by the Centre. And those things that are carried toward that Medium, it is likely that there also they would rest. So much therefore the rather shall the earth rest in the middle, and (receiuing all things into it selfe that fall) by his owne waight shall bee most immoueable. Againe, they seeke to proue it by reason of motion and his nature: for of one and the same simple bodie, the motion must also be simple, saith Aristotle. Of simple motions there are two kindes, Right and Circular: Right are either vp or downe: so that euery simple motion is either downward toward the Centre, or vpward from the Centre, or Circular about the Centre. Now vnto the earth and water in respect of their waight, the motion downward is conuenient to seeke the Centre: to Aire and Fire in regard of their lightnesse, vpward and from the Centre. So is it méete to these Elements to attribute the right or straight motion, and to the Heauens onely it is proper circularly about this meane or Centre to be turned round. Thus much Aristotle. If therefore (saith Ptolomie of Alexandria) the Earth should turne but onely by that daily motion, things quite contrarie to these should happen. For his motion should be most swift & violent, that in foure and twentie houres should let passe the whole circuit of the Earth: and those things which by sudden turning are stirred, are altogether vnmét to collect, but rather to disperse things vnited, vnlesse they should by some firme fasting be kept together. And long ere this, the Earth being dissolued in péeces, should haue bén scattered through the heauens, which were a mockery to think of: & much more, beasts, and all other waights that are lose could not remaine vnshaken. And also things falling should not light on the places perpendicular vnder them, neither should they fall directly thereto, the same being violently in the meane while carried away. Cloudes also

and

and other things hanging in the Ayre should alwaies seeme to vs to be carried toward the West.

The solution of these Reasons, with their insufficiencie.

These are the causes, and such other, wherewith they approue the Earth to rest in the middle of the world, and that out of all question. But he that will maintaine the Earths mobilitie, may say that this motion is not violent but naturall. And these things which are naturally mooued haue effects contrarie to such as are violently carried. For such motions wherein force and violence is vsed, must needes bee dissolued, and cannot bee of long continuance: but those which by nature are caused, remaine still in their perfite estate, and are conserued and kept in their most excellent constitution. Without cause therefore did Ptolomie feare least the Earth, and all earthly things should bee torne in peeces by this Reuolution of the Earth, caused by the working of Nature, whose operations are farre different from those of Arte, or as such humane intelligence may reach vnto. But why should he not much more think and misdoubt the same of the world, whose motion must of necessitie bee so much more swift and vehement then this of the Earth, as the Heauen is greater then the Earth: Is therefore the Heauen made so huge in quantitie that it might with vnspeakeable vehemencie of motion bee seuered from the Centre, least happily resting it should fall, as some Philosophers haue affirmed? Surely, if this reason should take place, the magnitude of the heauen should infinitly extend. For the more this motion should violentlie bee carried higher, the greater should the swiftnesse be, by reason of increasing of the circumference, which must of necessitie in 24. houres be past ouer, and in like manner by increase of the motion, the Magnitude must also necessarilie bee augmented: thus should the swiftnesse increase Magnitude, and the Magnitude the swiftnesse infinitly. But according to that ground of nature: whatsoeuer is infinite can neuer be passed ouer. The Heauen therefore of necessity must stand and rest fixed. But say they, without the heauen there is no body,

no place, no emptinesse, no not any thing at all whether heauen should or could farther extend. But this surely is very strange, that nothing should haue such efficient power to restraine some thing, the same hauing a very essence and being. Yet if wee would thus confesse that the Heauen were indeede infinite vpward, and onely finite downeward in respect of his sphericall concauitie: much more perhaps might that saying bee verified, that without the heauen is nothing, seeing euery thing in respect of the infinitenesse thereof had place sufficient within the same. But then must it of necessitie remaine immoueable. For the chiefest reason ỳ hath moued some to thinke the Heauen limitted, was Motion, which they thought without controuersie to bee indeede in it. But whether the world haue his bounds, or bee indeede infinite and without bounds, let vs leaue that to bee discussed of Philosophers: sure we are that the Earth is not infinite, but hath a circumference limitted. Seeing therefore all Philosophers consent the limitted bodies may haue motion, and infinite cannot haue any: why doe we yet stagger to confesse motion in the Earth, being most agreeable to his forme and nature, whose bounds also and circumference wee knowe, rather then to imagine that the whole world should sway end turne, whose ende wee knowe not, ne possible can of any mortall man be knowne? And therfore the true motion indeede to be in the Earth, and the apparance onely in the Heauen: and that these apparances are not otherwise then if the Virgilian Æneas should say:

Prouehimur portu, terræque vrbésque recedunt.

FOr a ship carried in a smoth Sea with such tranquillitie doth passe away, that all things on the shores and the seas, to the saylers seeme to moue, and themselues onely quietly to rest with all such things as are aboord with them: so surely may it be in the Earth, whose motion being naturall and not forcible, of all other is most uniforme and vnperceiueable, whereby to vs that saile therein, the whole worlde may seeme to roule about. But what shall we then say of Clowdes and other things hanging or resting

in

in the ayre, or tending vpward, but that not onely the Earth & sea making one Globe, but also no small part of the ayre is likewise circularly carried, & in like sort al such things as are deriued from them, or haue any manner of alliance with them: either for that the lower Region of the ayre being mixt with earthly and watrie vapours, follow the same nature of the Earth: either that it be gained and gotten from the Earth by reason of Vicinitie or Contignitie. Which if any man marualle at, let him consider how the olde Philosophers did yeeld the same reason for the Reuolution of the highest Region of the ayre, wherein wee may sometime beholde Comets carried circularly no otherwise then the bodies Celestiall seeme to be, and yet hath that Region of the ayre lesse conuenience with the Orbes Celestiall then this low part with the Earth. But we affirme that part of the ayre in respect of this great distance to be destitute of this motion terrestriall, & that this part of the ayre that is next to the Earth doth appeare most still and quiet, by reason of his vniforme naturall accompanying of the Earth, and likewise things that hang therein, vnlesse by windes or other violent accident they bee tossed to and fro. For the winde in the ayre is nothing els but as waues in the Sea. And of things ascending and descending in respect of the world we must confesse them to haue a mixt motion of right and circular, albeit it seeme to vs right & straight, not otherwise then if in a ship vnder sayle a man should softly let a plummet down from the top along by the mast euen to the deck: this plummet passing alwayes by the straight mast, seemeth also to fall in a right line, but being by discourse of reason weyed, his motion is found mixt of right and circular. For such things as naturally fall downward, being of earthly nature, there is no doubt but as parts they retaine the nature of the whole. No otherwise is it to these things that by fierye force are carried vpward. For the earthly fire is chiefly nourished with earthly matter: and flame is defined to bee naught els but burning fume or smoke, and that the propertie of fire is to extend the subiect whereinto it entereth, the which it doth with so great violence, as by no meanes or engines it can be constrayned, but that with breach of bands it will performe his nature. This motion extensiue is from the Centre to the circumference:

sa.

so that if any earthly part be fiered, it is carried violently vpward. Therefore whereas they say, that of simple bodies the motion is altogether simple, of the circular it is chiefely verified so long as the simple bodie remayneth in his naturall place, and perfite vnitie of composition: for in the same place there can bee no other motion but circular, which remaining wholy in it selfe, is most like to rest an immobilitie. But right or straight motion onely happen to those things that stray and wander, or by any meanes are thrust out of their natural place. But nothing can be more repugnant to the forme and ordinance of the world, then that things naturally should be out of their naturall place. This kind of motion therfore that is by right line, is onely accident to those things that are not in their right state or prefection naturall, while parts are disioyned from their whole bodie, and couet to returne to the vnitie thereof againe. Neither doe these things which are carried vpward or downeward besides this circular mooving make any simple vniforme, or equall motion, for which their leuitie or ponderositie of their bodie, they cannot be tempered, but alwayes as they fall (beginning slowly) they increase their motion, & the further the more swiftly, whereas contrariwise this our earthly fire (for other wee cannot see) wee may beholde as it is carried vpwarde to vanish and decay, as it were confessing the cause of violence to proceede onely from his matter terrestriall. The circular motion alway continueth vniforme and equall, by reason of his cause which is indeficient and alway continuing. But the other hasteneth to the end and to attaine that place where they leaue longer to be heaue or light, and hauing attained that place, their motion ceaseth. Seeing therfore this circular motion is proper to the whole, as straight is onely vnto parts, we may say that circular doeth rest with straight, as animal cum ægro. And whereas Aristotle hath distributed simplicem motum into these three kinds, A medio ad medium, and circa medium, it must bee onely in reason, and imagination, as wee likewise seuer in consideration Geometricall, a poynt, a line, and a superficies, whereas in deede neither can stande without other, ne any of them without a bodie.

Hereto wee may adioyne, that the condition of immobilitie is more

more noble and diuine than that of change, alteration, or inſtabilitie: and therefore more agréeable to Heauen than to this Earth, where all things are ſubiect to continuall mutabilitie. And ſeeing by euident proofe of Geometricall menſuration, wée finde that the Planets are ſometimes nigher to vs, and ſomtimes more remote, and that therefore euen the maintainers of the Earths ſtabilitie, are enforced to confeſſe, that the earth is not their Orbes Centre, this motion circa Medium, muſt in more generall ſort bée taken, and that it may bée vnderſtand that euery Orbe hath his peculiar Medium and Centre, in regard whereof this ſimple and vniforme motion is to be conſidered. Séeing therfore that theſe Orbs haue ſeuerall Centres, it may bee doubted whether the Centre of this earthly granitie, be alſo the Centre of the world. For granitie is nothing elſe but a certaine proclivity or naturall coueting of parts to be coupled with the whole: which by diuine prouidence of the Creator of all, is giuen and impreſſed into the parts, that they ſhould reſtore themſelues into their vnitie and integritie, concurring in Sphericall forme. Which kind of propietie or affection, it is likely alſo that the Mone and other glorious bodies want not, to knit and combine their parts together: and to maintaine them in their round ſhape, which bodies notwithſtanding are by ſundrie motions, ſundrie waies conueted. Thus as it is apparant by theſe naturall reaſons, that the mobilitie of the Earth is more probable and likely than the ſtabilitie: ſo if it be Mathematically conſidered, and Geometricall menſurations euery part of euerie Theoricke examined: the diſcréete ſtudent ſhall finde, that Copernicus, not without great reaſon did propone this ground of the Earths mobilitie.

The Addition.

A short discourse touching the variation of the Compasse.

MArueilous (no doubt) is that naturall proprietie of the Magnes, whereby the needle touched immediatly turneth to some one certaine point of the Heauens, and after sundrie motions hither and thither, findeth rest onely in one place and point. And albeit this point in seuerall Horizons be different, yet in any one Horizon it remaineth alway permanent, and therfore it plainly appeareth that the same proceedeth of some constant permanent cause naturall, and not of any mutable vncertaine cause accidentall. But what this cause should bee, no man hitherto hath truely discouered. To omit apparant absurd opinions, the most probable of those that haue been giuen and generally best allowed, is the point Attractiue, which should bee of such vertue as to draw the needle touched alway toward the same point: but whether this point should bee in the heauens or earth, is another controuersie. Such as will haue it in the earth, affirme it to bee a huge mountaine or rocke of Magnes stone, distant from the Pole certaine grades, which drawing the needle to it selfe, alwaies causeth it to make an angle of variation from the Pole of the world, saue onely vnder the Meridian that passeth by the same Attractiue point. But the error of this opinion will soone be found of them that shall vpon this supposition, and two different angles of variation, search out the place of that point Attractiue (the same being in that Intersection of the two Circles of position by the variations determined) and then conferre that with some third angle of variation: whereby it shal plainly appeare that in the earth no such one Attractiue point can be imagined, as shal by circle of opposition produce such variations as in Nauigation haue been discouered. And to place this point Attractiue in any of the heauēs, it would appeare more absurd. For whether the Heauens moue, and the Earth rest immoueable, or the Earth moue, and the great Orbe of starres be permanent, as of necessitie the one or the other must be true (considering a motion is apparant) it must necessarily follow, that his alteration should be in continuall alteration euery houre and moment

ment of the day: but by experience we find the contrary, and therfore may necessarily be inferred, no such Attractiue poynt in that Heauen. So that hauing fonnd by these trials this imagination of a poynt Attractiue, and such instruments as haue been vpon that ground deuised, but meere vanities, I haue somewhat further sought. And among sundrie imaginations that I haue Mathematically handled, I thinke it is not amisse to propone one to be considered, weied and examined by exquisite triall of Geometricall demonstration, and Arithmeticall calculation: for it is no question for grosse Mariners to meddle with, no more then the finding of the Longitude. And therfore I cannot a little wonder at the blind boldnes of Sebastian Cabotto, and some others, that being ignorant both in Geometricall demonstration, and Arithmeticall Symicall calculations, haue nathelesse tane vpon them in these most difficile questions to promise resolution, being no more able or likely to performe it, then an Oxe to flie between two mountaine tops. Those sciences being the only wings to eleuate our grosse senses to matter so high and mysticall, let such content themselues with the praise of painfull hard, farre trauelled mariners, and for their new discoueries let them learne Apelles lesson: Ne sutor vtra crepidam. Of these two Problemes thus much I promise for the inuention of the Longitude, I will (God sparing life) deliuer meanes as exact, certaine, and feasible, at all times of the yeere in what place soeuer, as by Eclipses. And for the other if I deliuer not the like, at the least so farre I will wade therein, that such blind boldnesse knowing somewhat more their owne imperfection, shall in such mysteries vse more modestie.

An Hypothesis or supposed cause of the variation of the Compasse, to be Mathematically weied.

AS the Axis of the Earth, notwithstanding all other motions remaineth as it were immoueable, and yet in respect of the sphericall fourme of the Earth in euery seuerall Horizon maketh a seuerall line Meridionall, by reason of the section made in the superficies of the Horizons by Meridians, hauing all that Axis as their common diametre, so

may it also come to passe of the line of the needle and his varation, the needle being alway permanent in one plaine superficies, according to the seuerall section of the plaine wherein it resteth, and the Horizon there may be continually made, in euery plaine new variations. More plainely to open this imagination, thus I say: that as in a payre of ballance of equall waight there is a certaine motion to and fro before they finde their true place of rest (the same being only in the leuell of the Horizon) which commeth to passe as Copernicus affirmeth, by the attractiue Centre of the Earth, who drawing vnto him either waight with like force, finding the subiects like also, compelleth them to rest in the superficies like distant from that Attractiue Centre: so in the needle being a body endued with two seuerall properties, the one of Grauitie & Lenitie, which being equally poyzed, forceth him to abide in the Horizon: the other being Magneticall and receiued by the touch, which causeth him to rest alway in that one Meridiã, to the Magnes appropriate, it thereby commeth to passe, that after sundry ballancing this way and that way, it onely setleth in the common section of this peculiar Meridian and the Horizon. So that euen as in Dyals the line of the stile onely accordeth and concurreth with the Meridian line, in such as are voyd of declination, but in all such playnes as are declinatorie, the line of the stile varieth from the Meridian line, and the same angle of variation also altereth as well in respect of inclination as declination: so I suppose this variation of the compasse to be nothing els but the angle comprehended betweene the Meridian line, and the common section of the magneticall Meridian and the Horizon in the Horizontall plaine, and this Angle to bee alwayes exactly equall to the Angle contayned of the Meridian line, and line of the stile: The Longitude of the place proponed accounted from the Magneticall Meridian, being equall to the declination of the Dyals playne superficies, making computation from South to East Circularly, and the Latitude of the place equall to the complement of the inclination of the same superficies Horologiall. Of the veritie of this supposition I could easily determine, if there were any trust to the obseruation of Mariners: but hauing found by experience their grosse vsage and homely instruments, where halfe a poynt commonly

monly breaketh no square: and also their repugnant tales that haue trauayled the very selfe same Voyages, I cannot yet resolue.

VPon due examination of this Hypothesis there may happily fall out a strange Paradox, not thought of hitherto, that these vulgare maryne Chartes desynate with Parallele Meridians, and right lined Rumbie, being of themselues apparantly false and erronious: yet vsed without rectification of the compasse, may bring foorth true effects, and so two errours concurring produce a veritie.

Errors in the Arte of Nauigation commonly practised.

FIrst, all their Chartes are described with straight Meridian lines running equidistant or Parallele, which errour is most manifest to any that haue tasted but the first principles of Cosmographie, considering they are all great circles, and concurre in the Poles.

SEcondly, they suppose that running vpon any of their poynts of their Compasse, they should passe in the Circumference of a great circle, and therefore in the plaine Charte describe those winds with straight lines: but therein are they greatly abused, for the Shippe stenning the North and the South, onely maketh her course in a great Circle: East or West she describeth a Paralle, and being stirred on any other meane poynt, (the Compasse being truely rectified) shee delineateth in her course a Curue or Helicall line, neither straight nor Circular, but mixt of both: and therefore to set forth these windes in the Chartes with straight lines is most erronious,

THirdly, their rule to know Latitude by the Pole starre, adding or substracting from his Altitude according to the situation of the grades, is all false, and that worst is, cannot be amen-

ded: but be it neuer so wel rectified to one climate, yet is it falſe in all other.

FOurthly, their taking of the Sunne with their Baliſtile (as they terme it) is moſt falſe: and whereas ſome finding the errour thereof, haue gone about to remedie the ſame by cutting off a part at the ende, thinking thereby it might approch to the Centre of the eye, they encreaſe thereby the errour, and make it more falſe. For viſus non fit à puncto, as they ſuppoſe. And this errour is much like the other of the Pole ſtar and ſituation of the guards: for be it neuer ſo well corrected by ſection to any one Altitude, then ſhall it bee falſe for all other, as to any ſkilfull in Perſpectiue it is eaſily demonſtrate.

This errour I haue alreadie reformed, Demonſtratiuè, & Practicè in my booke lately publiſhed, entituled Alæ ſeu Scalæ Mathematicæ.

Alſo the rules they haue to know how many leagues they ſhal runne vpon euery poynt to raiſe one degree in Latitude, are alſo meere falſe. For they ſearch that Arcke Itinerall as though it were the Hypothenuſa to a right angled triangle, whoſe ſides are circles of contrary nature, the one a Parallele, the other a great circle, and therefore without all ſence ſeeke they by proportion of right lines to deliuer their quantitie.

But beſides theſe errours, they haue one great imperfection yet in their arte, and hither to by no man ſupplied, and that is the want of exact Rules to knowe the Longitude or Arckes Itinerall, Eaſt and Weſt, without the which they can neither truly giue the place or ſituation of any coaſt, Harborough, Roade or Town, ne yet in ſayling, diſcerne how the place they ſayle vnto beareth from them, or how farre it is diſtant, whereby they are inforced long before they come at any Coaſt, all night to ſtrike ſayle, no other wayes then if they were vpon it, thereby loſing the benefite of proſperous winds, in ſuch ſort ſometime, that whereas keeping a true courſe they might haue been quietly at Roade, they are by

by contrarie and aduerſe tempeſts carried farre off, and ſo not without great charge to the owner, paine to the companie, and perill to the veſſell, are enforced to waſt their time, which groweth of their ignorance, that they neither haue true Rules to direct themſelues the nigheſt courſe, ne yet treading their beaten paths can aſſuredly decide of their certaine place. For reformation of theſe errors and imperfections, new Chartes, new Inſtruments, and new Rules muſt be preſcribed. Wherein I haue prepared in a peculiar volume for that purpoſe to entreate, wiſhing in in the meane time that ſuch as are not able to reforme theſe faults, will abſtaine to teach our Countriemen moe errours.

FINIS.